ORDER NO. SD8012-1811

Service Manual

FM/AM Stereo Receiver
SA-222
[M], [MC]

Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

(IHF '78)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output 20 Hz~20 kHz both channels driven 0.04% total harmonic distortion	30W per channel (8 ohms)
1 kHz continuous power output both channels driven 0.04% total harmonic distortion	33W per channel (8 ohms) 35W per channel (4 ohms)
Dynamic headroom	0.7 dB (8 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.04% (8 ohms)
half power at 20 Hz~20 kHz	0.025% (8 ohms)
half power at 1 kHz	0.009% (8 ohms)
SMPTE intermodulation distortion	0.04% (8 ohms)
PHONO	RIAA standard curve ±0.8 dB
TUNER, AUX, TAPE	5 Hz~70 kHz, −3 dB
	20 Hz~20 kHz, +0.2 dB, −0.2 dB
Input sensitivity	
PHONO	0.5 mV (2.5 mV, IHF '66)
TAPE	30 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO	75 dB (80 dB, IHF '66)
TUNER, AUX, TAPE	80 dB (95 dB, IHF '66)
Maximum input voltage	
PHONO	120 mV (130 mV, 1 kHz)
Input impedance	
PHONO	47 kilohms
TAPE	22 kilohms
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Low frequency damping factor	30 (8 ohms) 15 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

■ FM TUNER SECTION

Frequency range	87.9~107.9 MHz
Sensitivity	10.8 dBf (1.9 μV, IHF '58)
50 dB quieting sensitivity	
MONO	13.7 dBf (2.7 μV IHF '58)
STEREO	37.2 dBf (39.7 μV IHF '58)
Total harmonic distortion	
100 Hz	0.15% (MONO), 0.2% (STEREO)
1 kHz	0.15% (MONO), 0.2% (STEREO)
6 kHz	0.3% (MONO), 0.3% (STEREO)
S/N	
MONO	75 dB
STEREO	70 dB
Frequency response	20 Hz~15 kHz, +1 dB, −2 dB
Alternate channel selectivity	70 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	75 dB
Spurious response rejection at 98 MHz	82 dB
AM suppression	55 dB
Stereo separation	
1 kHz	42 dB
10 kHz	32 dB
Carrier leak	
19 kHz	−38 dB
38 kHz	−50 dB
Antenna terminals	300 ohms (balanced) 75 ohms (unbalanced)

Technics

Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

Panasonic Hawaii, Inc.
320 Waiakamilo Road, Honolulu,
Hawaii 96817

Panasonic Canada
Division of Matsushita Electric,
of Canada Ltd.
5770 Ambler Drive,
Mississauga, Ontario L4W 2T3

■ AM TUNER SECTION

Frequency range	530~1620 kHz
Sensitivity	30 μV, 300 μV/m
Selectivity	55 dB
Image rejection at 1000 kHz	50 dB
IF rejection at 1000 kHz	40 dB

■ GENERAL

Power consumption	185W
Power supply	AC 120V, 60 Hz
Dimensions (W×H×D)	430 × 120 × 300 mm (16-15/16" × 4-23/32" × 11-13/16")
Weight	5.9 kg (13 lb.)

Note:
This unit is equipped with an FM/AM allocation selector on the rear panel. The specifications shown above are correct with this selector set to the "FM 0.2 MHz/AM 10 kHz" position. If it is set to the "FM 0.05 MHz/AM 9 kHz" position, however, the FM frequency range becomes 87.50~108.00 MHz, and the AM frequency becomes 522~1611 kHz.

Weights and dimensions shown are approximate.

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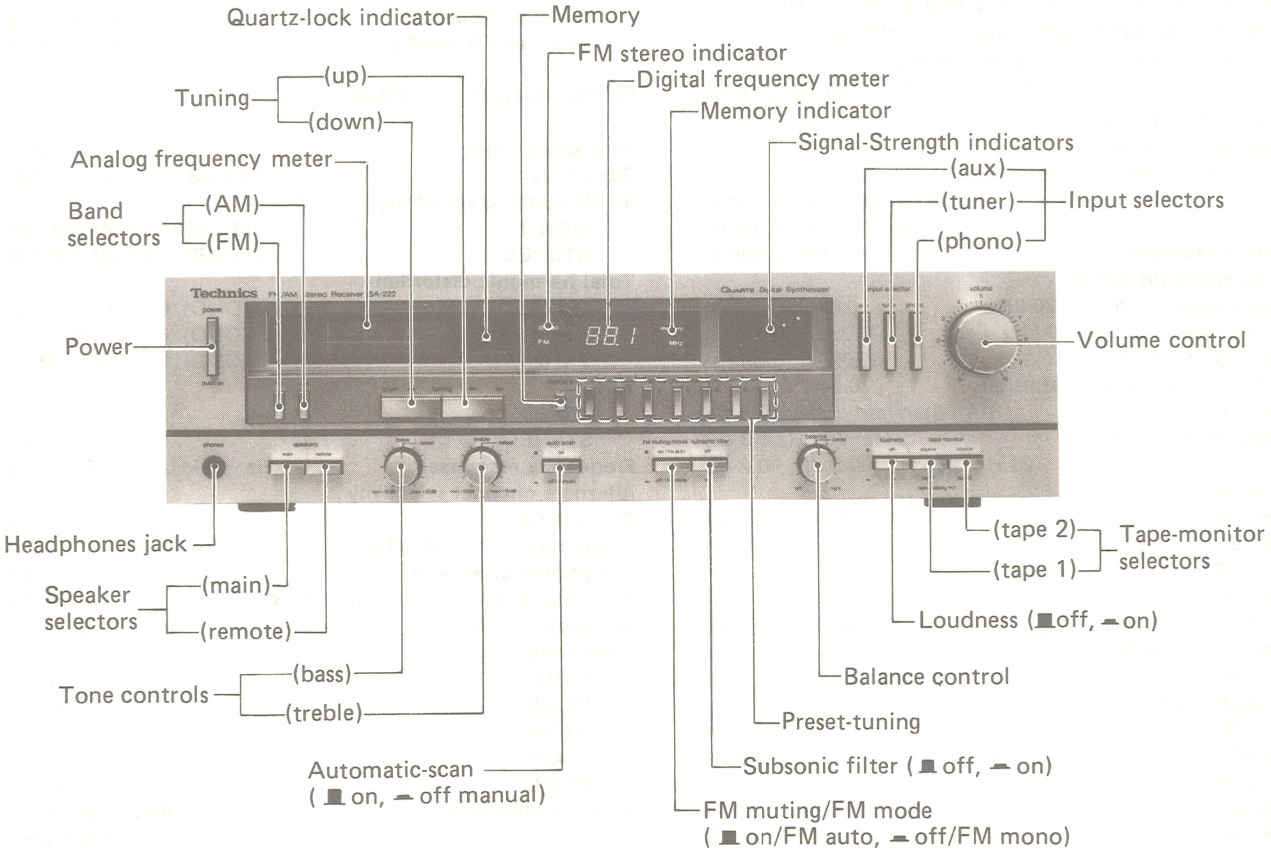
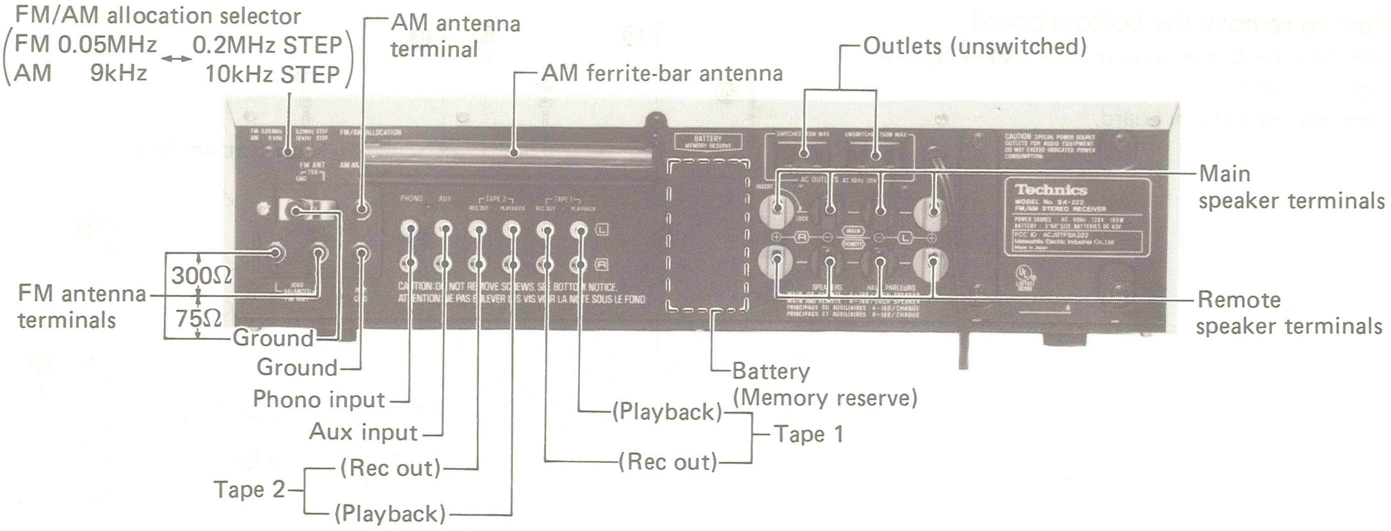
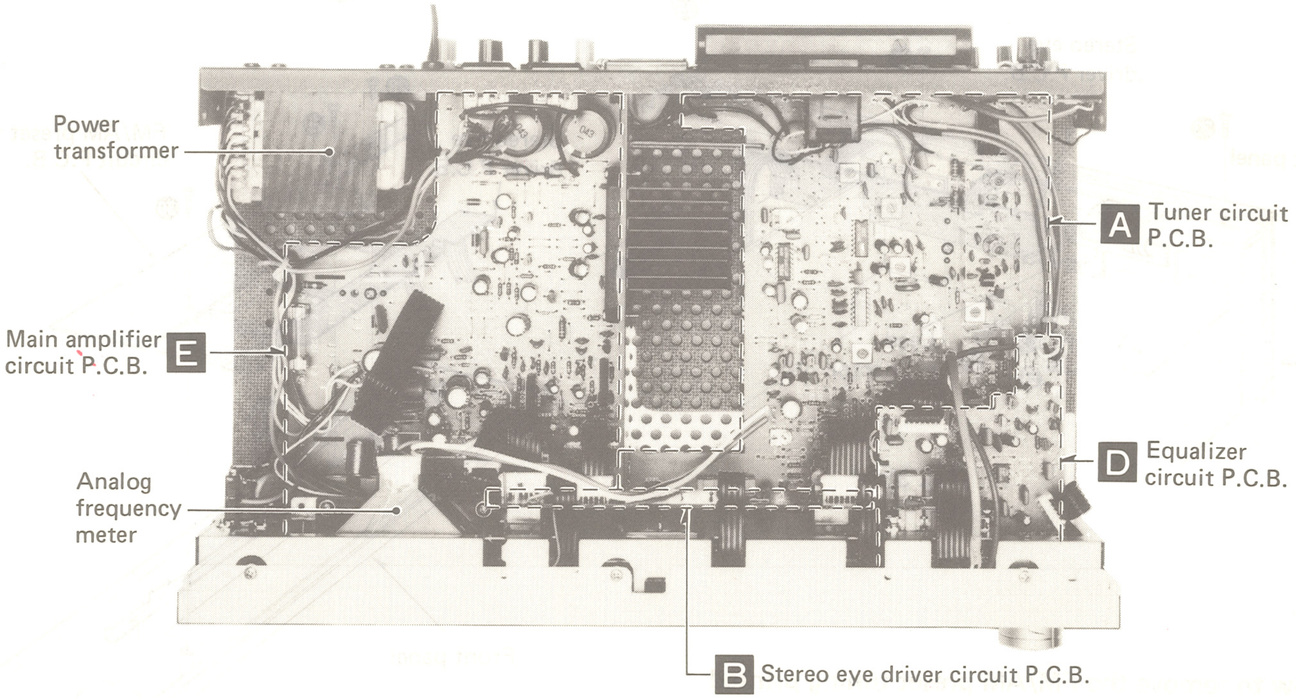
■ LOCATION OF CONTROLS


Quartz-lock indicator
Memory
FM stereo indicator
Digital frequency meter
Memory indicator
Signal-Strength indicators
Tuning
(up)
(down)
Analog frequency meter
Band selectors
(AM)
(FM)
(aux)
(tuner)
(phono)
Input selectors
Power
Volume control
Headphones jack
Speaker selectors
(main)
(remote)
Tone controls
(bass)
(treble)
Automatic-scan
(■ on, ▬ off manual)
(tape 2)
(tape 1)
Tape-monitor selectors
Loudness (■ off, ▬ on)
Balance control
Preset-tuning
Subsonic filter (■ off, ▬ on)
FM muting/FM mode
(■ on/FM auto, ▬ off/FM mono)
Technics
FM/AM Stereo Receiver SA-222
Quartz Digital Synthesizer
88.1
MHz

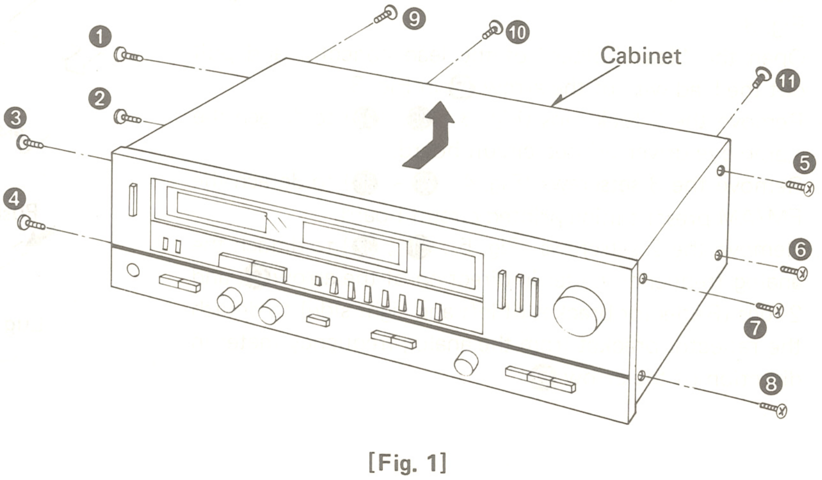

FM/AM allocation selector
(FM 0.05MHz ↔ 0.2MHz STEP)
(AM 9kHz ↔ 10kHz STEP)
AM antenna terminal
AM ferrite-bar antenna
Outlets (unswitched)
Main speaker terminals
Remote speaker terminals
FM antenna terminals
300Ω
75Ω
Ground
Ground
Phono input
Aux input
Tape 2
(Rec out)
(Playback)
Battery (Memory reserve)
(Playback)
Tape 1
(Rec out)


Power transformer
A Tuner circuit P.C.B.
Main amplifier circuit P.C.B. E
Analog frequency meter
D Equalizer circuit P.C.B.
B Stereo eye driver circuit P.C.B.

DISASSEMBLY INSTRUCTIONS

• How to remove the cabinet

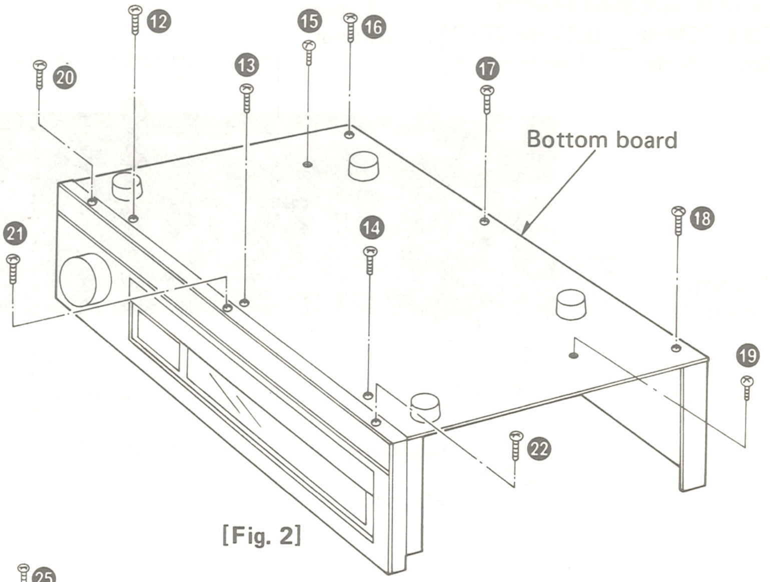
1. Remove the 8 setscrews (Fig. 1 : ①~⑧) on the side and 3 setscrews (Fig. 1 : ⑨~⑪) on the back of the cabinet.
2. Remove the cabinet.


①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
Cabinet

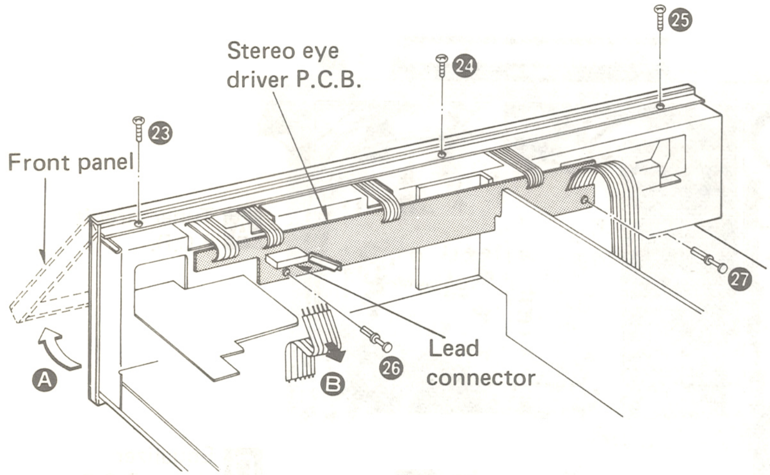
[Fig. 1]

• How to remove the bottom board

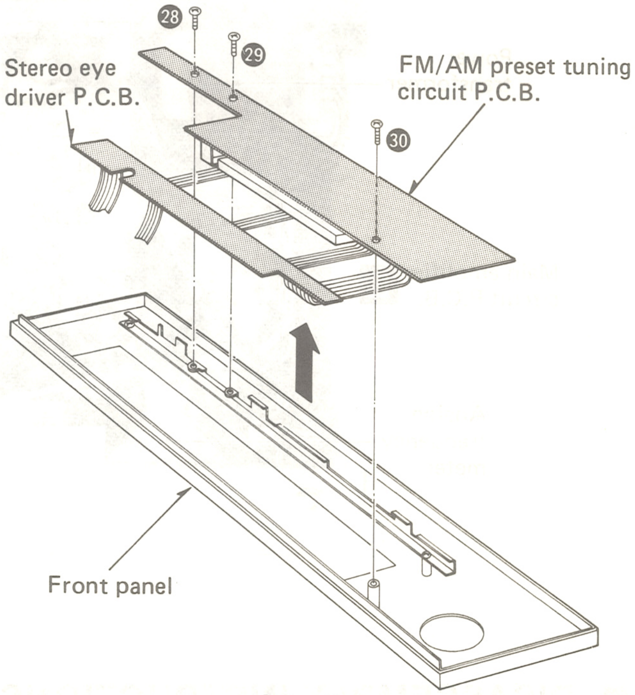
1. Remove the 8 setscrews (Fig. 2 : ⑫ ~ ⑲) of the bottom board.
2. Remove the bottom board.


⑫
⑮
⑯
⑳
⑬
⑰
Bottom board
⑱
㉑
⑭
⑲
㉒

[Fig. 2]


㉕
Stereo eye driver P.C.B.
㉔
㉓
Front panel
㉗
Lead connector
㉖
Ⓐ
Ⓑ

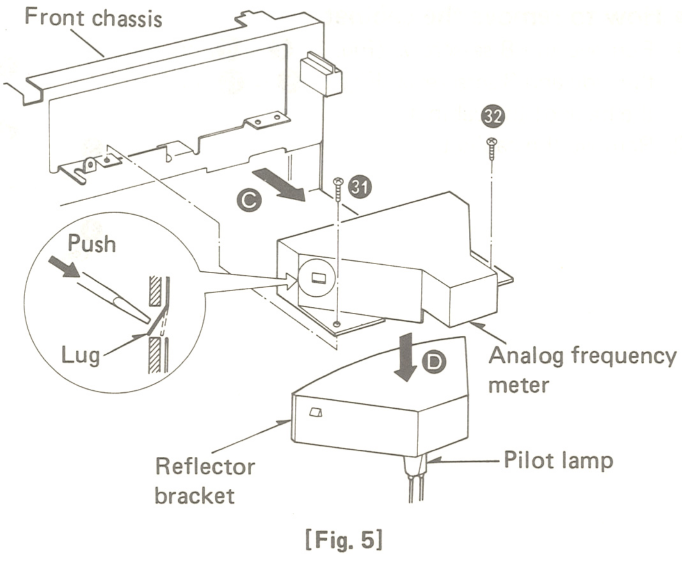
[Fig. 3]


㉘
㉙
Stereo eye driver P.C.B.
FM/AM preset tuning circuit P.C.B.
㉚
Front panel

[Fig. 4]

• How to remove the FM/AM preset tuning printed circuit board and the analog frequency meter

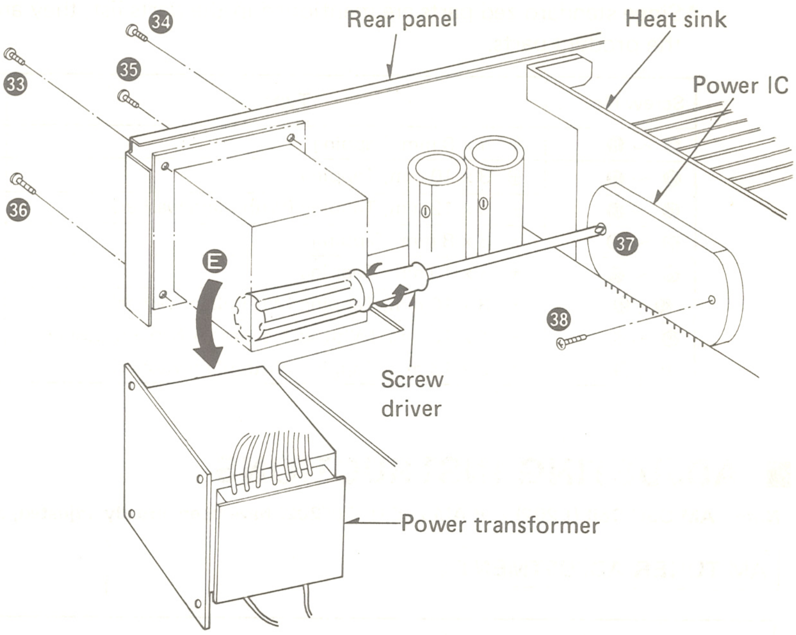
1. Remove the cabinet.
2. Remove the 6 setscrews (Fig. 2 and 3 : ⑳ ~ ㉕) of the front panel.
3. Move the front panel in the direction of the arrow Ⓐ in Fig. 3.
4. Open the "lead holder" of the lead conector and pull out the lead wire of the arrow Ⓑ in Fig. 3.
5. Remove the 2 lock pins (Fig. 3 : ㉖ , ㉗) to detach the stereo eye driver printed circuit board.
6. Remove the 3 setscrews (Fig. 4 : ㉘ ~ ㉚) to detach the FM/AM preset tuning printed circuit board.
7. Remove the 2 setscrews (Fig. 5 : ㉛ , ㉜) to detach the analog frequency meter in direction of the arrowⒸ, and 2 lugs (Reflector bracket of left and right side) to detach the reflector bracket from the analog frequency meter in direction of the arrow Ⓓ.


Front chassis
㉜
㉛
Ⓒ
Push
Lug
Ⓓ
Analog frequency meter
Reflector bracket
Pilot lamp

[Fig. 5]

• How to remove the power IC

1. Remove the cabinet and bottom board. (Refer to "How to remove the cabinet," and "How to remove the bottom board.")
2. Remove the 4 setscrews (Fig. 6 : ㉝ ~ ㊱) to detach the power transformer from rear panel in the direction of the arrow Ⓔ.
3. Unsolder of power IC.
4. Remove the 2 setscrews (Fig. 6 : ㊲ , ㊳) used to secure the power IC on the heat sink, and then pull the power IC.
5. When mounting the power IC, apply silicone compound (or equivalent heat diffuser) to the rear side of power IC, and then follow the steps 1 ~ 4 reversely.



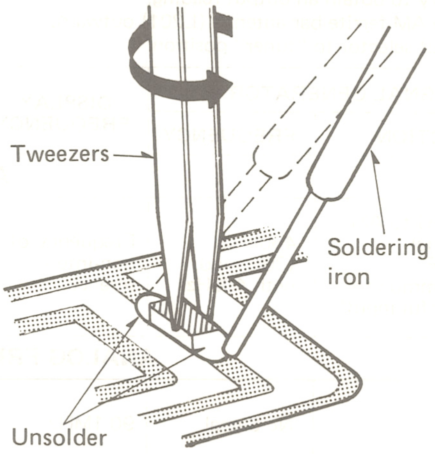
[Fig. 6]

• How to replace chips (resistor, capacitor and jumper)

1. Unsolder from chip by using solder sucker.
2. Remove chip with tweezers by rotating it while removing solder as shown in Fig. 7.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in Fig. 8.

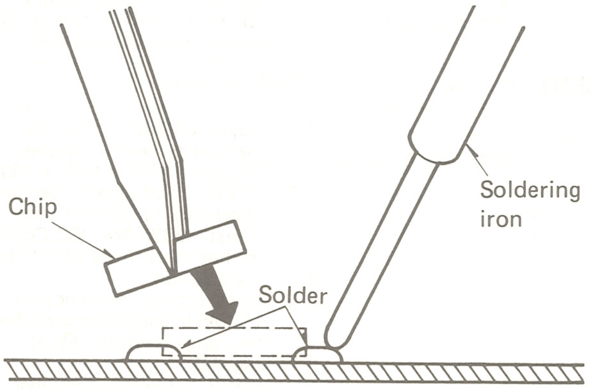
Notes:

1. Do not use chip again which is removed from printed circuit board.
2. Use lead wire with insulator for replacement instead of chip jumper.



[Fig. 7]

Color	Original Parts Name
Black	Chip Resistor and Jumper
Brown, White or Green	Chip Capacitor



[Fig. 8]

• Note for replacing chips

1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60W) and tweezers for replacing chips.

• Precautions for repair

When frequency is not indicated, FL (display tube), FL driver, digit circuit, and micro-computer must be checked by oscilloscope.

In this case, take care not to allow short circuit between IC terminals or application of voltage from measuring instrument to IC terminals.

*Since standardized parts are mentioned in the parts list, they are sometimes different in Part No. and Color from the product parts.

Screw No.	Type	Color	Product Part No.	Figure No.
❶ ~ ❽	⊕ 4 x 8 mm, Tapping	Silver	XTB4+8FFN	Fig. 1
❾ ~ ⓫	⊕ 3 x 10 mm, Tapping	Black	XTB3+10BFZ	Fig. 1
⓬ ~ ⓳	⊕ 3 x 12 mm, Tapping (With plain washer)	Red	XTW3+12HFYR	Fig. 2
⓴ ~ ㉕	⊕ 3 x 8 mm, Tapping	Black	XTB3+8BFZ	Fig. 2 and 3
㉘ ~ ㉚	⊕ 3 x 10 mm, Tapping	Gold	XTB3+10B	Fig. 4
㉛ , ㉜	⊕ 3 x 10 mm, Tapping (With plain washer)	Gold	XTW3+10H	Fig. 5
㉝ ~ ㊱	⊕ 4 x 10 mm, (With spring washer & plain washer)	Black	XYA4+FF10FZ	Fig. 6
㊲ , ㊳	⊕ 3 x 16 mm, Tapping (With plain washer)	Gold	XTW3+16H	Fig. 6

■ ADJUSTING INSTRUCTIONS

Note: AM OSC Coil (L202) and AM 2nd IFT (T202) have been already adjusted, and require no adjustment.

AM TUNER ADJUSTMENT

* **Setting and Equipment used**

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Maintain line voltage at 120 volts.
4. Output of signal generator should be no higher than necessary to obtain an output reading.
5. Pull the AM ferrite-bar antenna (L201) outward.
6. Set input selector to "tuner" position.
7. Use a non-metal screwdriver for the adjustment.
8. Set FM·AM muting/mode switch to "on/FM auto" position.
9. Set band selector to "AM" position.
10. Set tape monitor switch to "source" position.
11. Set speaker selector to "main" position.
12. Set automatic-scan switch to "off" position.
13. Set FM/AM allocation selector to "0.2MHz/10kHz" position.

Step No.	AM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
	AM-IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 220pF capacitor. Common to chassis. (Powerful input)	450kHz (30% mod. with 400Hz)	Frequency of non-interference	Connect AC VTVM or scope to "Speaker" terminals of the set.	T201 (1st IFT)	1. Adjust the input frequency and adjustment points so that the output becomes maximum.
	ANALOG FREQUENCY METER ADJUSTMENT * Set band selector to "FM" position.					
2	–	No-Signal	90.1MHz	Connect DC VTVM to TP1 terminal.	L4 (FM OSC Coil)	1. Adjust L4 so that voltage measured by DC voltmeter is 4.49 ± 0.05V.
3	–	No-Signal	106.1MHz	Connect DC VTVM to TP1 terminal.	CT1 (FM OSC Trimmer)	1. Adjust CT1 so that voltage measured by DC voltmeter is 10.71 ± 0.05V.
4	–	No-Signal	100.1MHz	————	VR102 (Frequency meter)	1. Adjust VR102 so that the frequency meter indicates 100.1MHz. (Refer to Fig. 13)
5	–	No-Signal	107.9MHz	————	VR102 (Frequency meter)	1. Adjust VR102 so that the frequency meter indicates 107.9MHz. (Refer to Fig. 12) 2. Repeat steps (4) and (5).
	AM-RF ADJUSTMENT * Set band selector to "AM" position.					
6	–	No-Signal	1100kHz	Connect DC VTVM to TP1 terminal.	CT202 (AM OSC Trimmer)	1. Adjust CT202 so that the frequency meter indicates 1100kHz. (Refer to Fig. 12) 2. If it is not adjustable, set the frequency to 530kHz and adjust L202 (AM OSC Coil) so that the voltage of TP1 is 1.2 ± 0.05V. 3. Next, set the frequency to 1500kHz and make sure that the range is within Ⓐ of Fig. 13. If it is not within the range, perform the adjustments of steps 1 and 3 again.

	AM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
	AM-RF ADJUSTMENT					
7	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	610kHz (30% Mod. with 400Hz)	610kHz	Connect AC VTVM to scope to "Speaker" terminals of the set.	L201 (ANT Coil)	1. Adjust for maximum output. 2. Adjust ferrite core of L201 by screwdriver.
		1500kHz (30% Mod. with 400Hz)	1500kHz	Connect AC VTVM to scope to "Speaker" terminals of the set.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat step (7) until the frequency correctly matches the dial display.

FM TUNER ADJUSTMENT

*** Equipment used**

1. FM signal generator (FM-SG)
2. Stereo modulator
3. Distortion analyser
4. Oscilloscope
5. AC and DC electronic voltmeters (VTVM).
6. Frequency counter (19kHz and 108MHz measurable).
7. FM 300Ω dummy antenna (Fig. 9).

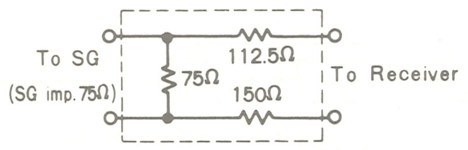
*** Preparation of FM signal generator (FM-SG)**

1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
3. The standard input of the set is 60dB (1mV), 400Hz 100% modulation (Because of using dummy antenna, SG output must be 12dB plus (IHF). That is, when input is 60dB, SG output is to be 72dB.

*** Setting**

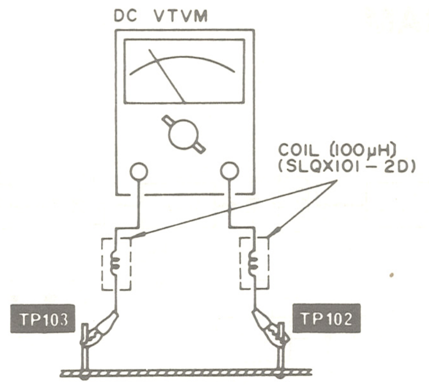
1. Set band selector to "FM" position.
2. Other setting are the same as in AM tuner adjustment.

Step No.	AM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTMENT	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
	FM-IF ADJUSTMENT					
8	–	No-Signal	100.1MHz	Connect DC VTVM between TP102 and TP103 through choke coil. (Refer to Fig. 10)	T101 (Discri. IFT)	Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
	FM RF ADJUSTMENT					
9	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	90.1MHz (100% Mod. with 400Hz) Weak input	90.1MHz	Connect scope to "Speaker" terminals of the set.	L1 (FM ANT Coil) L2 (FM DET Coil) T1 (FM IFT)	1. Check step (2) and if it is deflected readjust of L4. 2. Add weak input so that noise is included in the output wave form. 3. Make the adjustment so that the output wave form is vertically symmetrical. (Refer to Fig. 11) 4. Check step (3) and if it is deflected readjust of CT1.
	FM MUTING LEVEL ADJUSTMENT					
10	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Apply 16dB to antenna terminal)	100.1MHz (100% Mod. with 400Hz)	100.1MHz	Connect AC VTVM or scope to "Speaker" terminals of the set.	VR101(Muting level)	1. Set the FM muting/FM mode switch to "off/mono". 2. With the FM muting/FM mode switch set to "on/auto" adjust VR101 so that the output is given with muting condition released.
	FM MPX PILOT (VCO) ADJUSTMENT					
11	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	100.1MHz (Non-modulated)	100.1MHz	Connect frequency counter to TP301 terminal through resistor (100kΩ)	VR301 (VCO)	1. Set the FM muting/FM mode switch to "on/auto". 2. Adjust VR301 to 19kHz ± 30Hz.
	STEREO DISTORTION ADJUSTMENT					
12	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (100% Mod. with 400Hz) (L mode)	100.1MHz	Connect distortion analyser to "Speaker" terminals of the set.	T1 (IFT)	1. Set the FM muting/FM mode switch to "on/auto". 2. Re-adjust the already adjusted T1 within ± 90° from the preset core position so that the distortion of L ch is minimized.

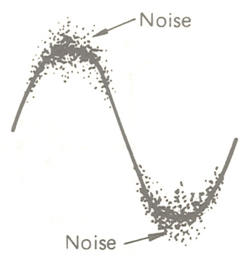

To SG
(SG imp. 75Ω)
75Ω
112.5Ω
150Ω
To Receiver

300Ω FM Dummy Antenna

[Fig. 9]

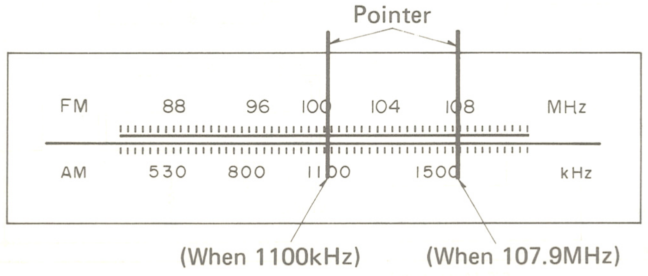

DC VTVM
COIL (100μH)
(SLQX101 – 2D)
TP103
TP102

[Fig. 10]

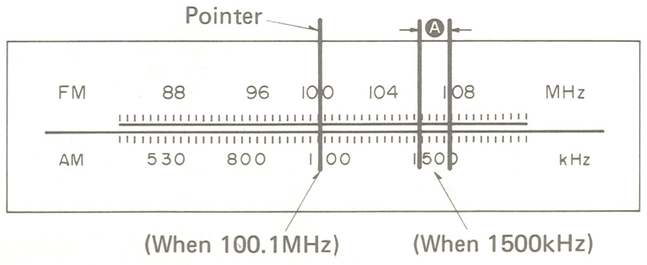


AF output wave form

[Fig. 11]

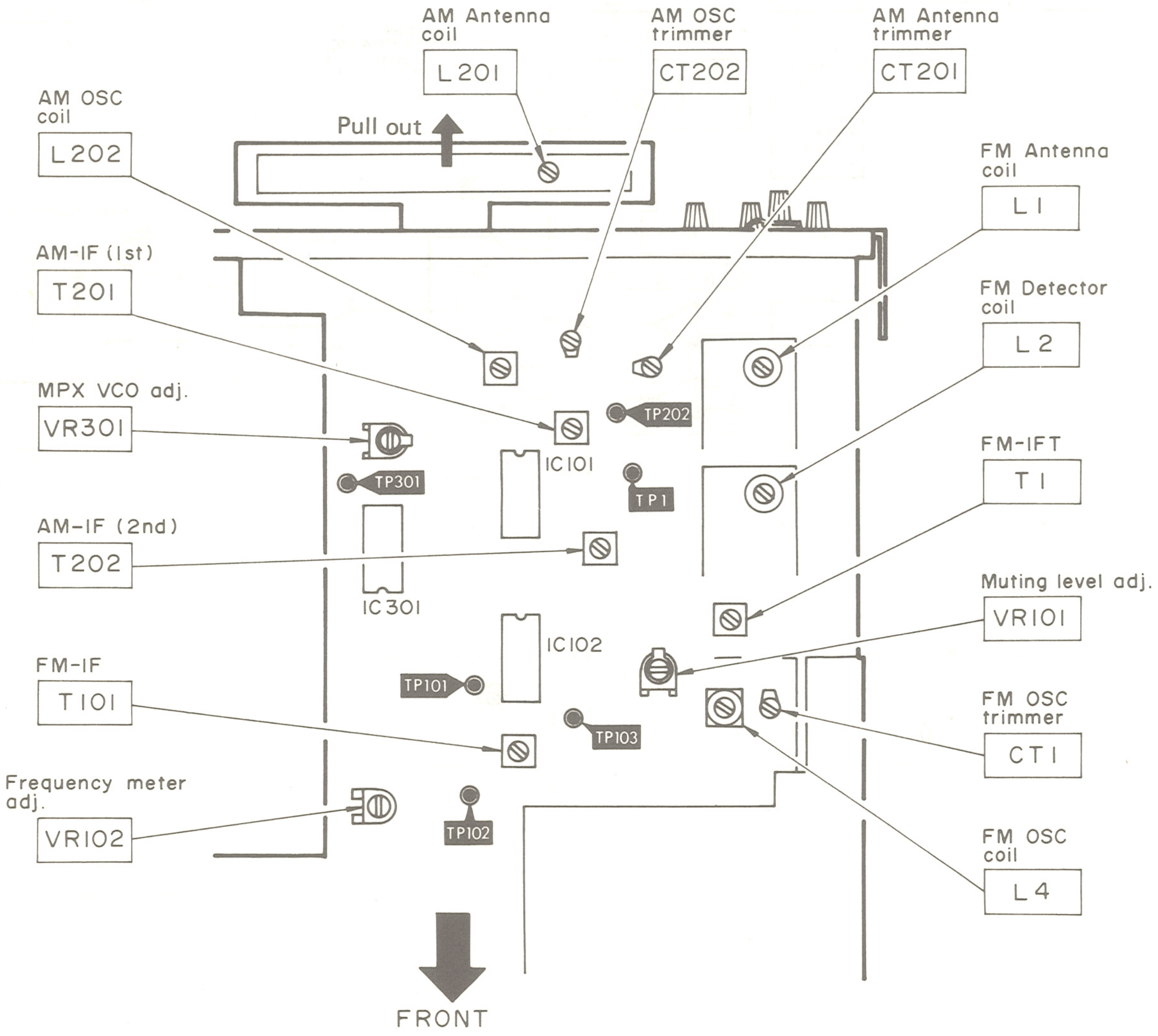

Pointer
FM 88 96 100 104 108 MHz
AM 530 800 1100 1500 kHz
(When 1100kHz)
(When 107.9MHz)

[Fig. 12]

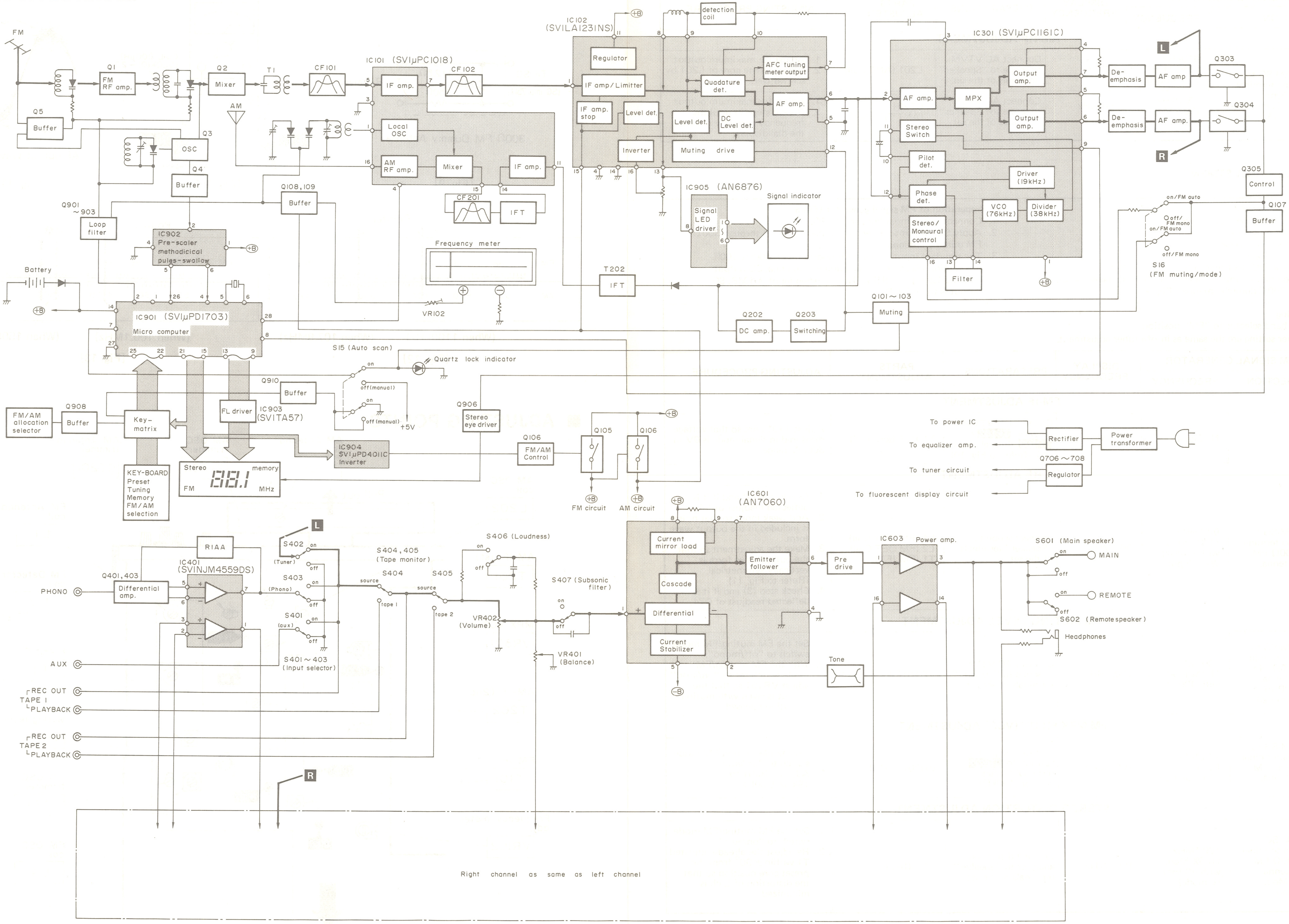

Pointer
Ⓐ
FM 88 96 100 104 108 MHz
AM 530 800 1100 1500 kHz
(When 100.1MHz)
(When 1500kHz)

[Fig. 13]

■ ADJUSTING POINTS


AM Antenna coil
L201
AM OSC trimmer
CT202
AM Antenna trimmer
CT201
AM OSC coil
L202
Pull out
FM Antenna coil
L1
AM-IF (1st)
T201
FM Detector coil
L2
MPX VCO adj.
VR301
TP202
IC101
TP1
TP301
FM-IFT
T1
AM-IF (2nd)
T202
IC301
Muting level adj.
VR101
IC102
FM-IF
T101
TP101
TP103
FM OSC trimmer
CT1
Frequency meter adj.
VR102
TP102
FM OSC coil
L4
FRONT

BLOCK DIAGRAM


FM
Q1
FM RF amp.
Q2
Mixer
T1
CF101
IC101 (SVIμPC1018)
IF amp.
CF102
Q5
Buffer
Q3
OSC
Q4
Buffer
AM
Local OSC
AM RF amp.
Mixer
IF amp.
CF201
IFT
Q108, 109
Buffer
Q901 ~903
Loop filter
IC902
Pre-scaler methadicical pulse-swallow
Frequency meter
VR102
Battery
IC901 (SVIμPD1703)
Micro computer
IC102 (SVILA1231NS)
detection coil
Regulator
IF amp/Limitter
Quadature det.
AFC tuning meter output
AF amp.
IF amp. stop
Level det.
Level det.
DC Level det
Inverter
Muting drive
IC905 (AN6876)
Signal LED driver
Signal indicator
T202
IFT
Q202
DC amp.
Q203
Switching
Q101 ~ 103
Muting
IC301 (SVIμPC1161C)
AF amp.
MPX
Output amp.
Output amp.
Stereo Switch
Pilot det.
Phase det.
Driver (19kHz)
VCO (76kHz)
Divider (38kHz)
Stereo/Monaural control
Filter
De-emphasis
De-emphasis
AF amp
AF amp.
L
R
Q303
Q304
Q305
Control
Q107
Buffer
on/FM auto
off/FM mono
on/FM auto
off/FM mono
S16 (FM muting/mode)
S15 (Auto scan)
on
off (manual)
Quartz lock indicator
Q910
Buffer
on
off (manual)
+5V
FM/AM allocation selector
Q908
Buffer
Key-matrix
FL driver
IC903 (SVITA57)
IC904 SVIμPD4011C Inverter
Q906
Stereo eye driver
Q106
FM/AM Control
Q105
Q106
FM circuit
AM circuit
KEY-BOARD Preset Tuning Memory FM/AM selection
Stereo
memory
FM
88.1
MHz
To power IC
To equalizer amp.
To tuner circuit
To fluorescent display circuit
Rectifier
Power transformer
Q706 ~ 708
Regulator
L
PHONO
Q401, 403
Differential amp.
RIAA
IC401 (SVINJM4559DS)
S402
(Tuner)
on
off
S403
(Phono)
on
off
S401
(aux)
on
off
S401 ~ 403 (Input selector)
S404, 405 (Tape monitor)
S404
S405
source
tape 1
source
tape 2
S406 (Loudness)
on
off
S407 (Subsonic filter)
on
off
VR402 (Volume)
VR401 (Balance)
AUX
REC OUT
TAPE 1
PLAYBACK
REC OUT
TAPE 2
PLAYBACK
IC601 (AN7060)
Current mirror load
Emitter follower
Cascade
Differential
Current Stabilizer
Pre drive
Tone
IC603 Power amp.
S601 (Main speaker)
MAIN
on
off
on
off
REMOTE
S602 (Remote speaker)
Headphones
R
Right channel as same as left channel

■ REPLACEMENT PARTS LIST…Electric Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacture be used for safety.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

INTEGRATED CIRCUITS

Ref. No.		Part No.	Part Name & Description
IC101		RVIUPC1018CF	IC, FM IF Amp. AM RF Amp. and AM Converter
IC102		SVILA1231NS	IC, FM IF Detector
IC301		SVIUPC1161C	IC, FM Multiplex
IC401		SVINJM4559DD	IC, Equalizer Amplifier
IC601, 602		AN7060F	IC, Differential Amplifier
IC603		SVISTK2028	IC, 2 Channel Power Amplifier
IC901		SVID1703C016	IC, Micro-Computer
IC902		SVIUPB553C–E	IC, Pre-Scaler
IC903		SVITA57	IC, FL Driver
IC904		SVIUPD4011C	IC, Nand Gate
IC905		AN6876	IC, Signal LED Driver

TRANSISTORS

Ref. No.		Part No.	Part Name & Description
Q1		2SK195–H1	Transistor, FM RF Amplifier [FET]
Q2		2SC1674–M	Transistor, FM Mixer
Q3, 4		2SC1675–L1	Transistor, FM Oscillator and Buffer (Use in ranks L1 or L2)
Q5, 303, 304		2SC945–P2	Transistor, Muting (Use in ranks P1 or P2)
Q101, 102, 106 107, 108, 109 203, 405, 701 707, 708, 904, 905		2SC1815–Y	Transistor, Switching, regulator (Use in ranks Y or O)
Q103, 104, 105 202, 301, 302 305, 406, 702 703, 704, 906 ～ 910		2SA1015–Y	Transistor, Switching, AF Amplifier & Regulator (Use in ranks Y or O)
Q401 ～ 404		2SC2320L–F	Transistor, Differential Amplifier (Use in ranks F or G)
Q601, 602		2SA992	Transistor, Pre-Driver
Q706		2SD880–Y	Transistor, Regulator (Use in ranks Y or GR)
Q901, 902, 903		2SC1815–G	Transistor, Loop Filter

DIODES

Ref. No.		Part No.	Part Name & Description
D1 ～ 3		**MA320G1–N**	Diode, Variable Capacitor (for FM)
D101 ～ 104, 202 204, 205, 709, 710, 901, 902, 904 ～ 917 918, 920, 926		**MA162A**	Diode
D105, 203		**20A90**	Diode, Detector
D201		SVDBB312	Diode, Variable Capacitor (for AM)
D701 ～ 704		SVDS2V20	Rectifier
D705, 706		SVDMZ316B	Diode, 16V Zener
D707, 708, 713, 714, 715		**SVDSR1K2**	Rectifier
D711, 919,		SVDMZ306B	Diode, 6V Zener
D716		SVDMZ333B	Diode, 33V Zener
D717		SVDMZ327B	Diode, 27V Zener
D718		SVDMZ306C1	Diode, 6V Zener
D921, 922, 923		LN213RP	Light Emitting Diode, Red
D924, 925		LN313GP	Light Emitting Diode, Green
D927		LN220RP	Light Emitting Diode, Red

COILS and TRANSFORMERS

Ref. No.		Part No.	Part Name & Description
L1		SLA4P55–P	Coil, FM Antenna
L2		SLD4P53–P	Coil, FM Detector
L3		**RLQY15G5**	Coil, Choke
L4		SLO4N21	Coil, FM Local Oscillator
L5		**RLQY25S2**	Coil, Choke
L201		SLF2C33	Coil, AM Ferrite Bar Antenna
L202		SLO2C29–P	Coil, AM Local Oscillator
L601, 602		SLQY15G–30	Coil, Choke
T1		SLI4C109	Transformer, FM IF
T101		SLI4C527–Z	Transformer, FM IF, Discriminator
T201		SLI2C127	Transformer, AM IF
T202		SLI2C413R	Transformer, AM IF
T701	⚠	SLT5M135	Transformer, Power Source

CERAMIC FILTERS

Ref. No.		Part No.	Part Name & Description
CF101		SVFE107MM–A	Ceramic Filter, FM 10.7MHz, Red
CF102		SVFE107MZ2–A	Ceramic Filter, FM 10.7MHz, Red
CF201		SVFSFP450HT	Ceramic Filter, AM 450kHz

VARIABLE RESISTORS

Ref. No.		Part No.	Part Name & Description
VR101		**EVTS3MA00B54**	Muting Level Adjustment, 50kΩ (B)
VR102		**EVNM4AA00B53**	Frequency Meter Adjustment, 5kΩ (B)
VR301		**EVTS3MA00B14**	PLL MPX Adjustment, 10kΩ (B)
VR401		EVHHMA551G25	Balance Control, 200kΩ (G)
VR402		EWJFHA066BF5	Volume Control 250kΩ (B)
VR501		EWJFCY066530	Bass Control, 100kΩ.
VR502		EWJFCO066C15	Treble Control 100kΩ (C)

VARIABLE CAPACITORS

Ref. No.		Part No.	Part Name & Description
CT1		ECV1ZW06X53N	Trimmer, FM Local Oscillator
CT201, 202		ECV1ZW20X53N	Trimmer, AM Antenna

COMPONENT COMBINATIONS

Ref. No.		Part No.	Part Name & Description
Z201		EXAF203Z471C	Component Combination, 0.01μF, (X2), 470Ω
Z301		EXPP182K104C	Component Combination, 0.0018μF, 100kΩ
Z601, 602 [MC] only		ECQJ0517	Component Combination 0.047μF, 10Ω
Z701, 702		RXAF103P22HD	Component Combination 0.01μF (X2)
Z901		EXFP7331MW	Component Combination 330pF (X7)
Z902, 903		EXBP87104K	Component Combination, 100kΩ (X7)

FUSE

Ref. No.		Part No.	Part Name & Description
F1	⚠	XBA1F25NU14	Fuse, 2.5A (125V)

CRYSTAL

Ref. No.		Part No.	Part Name & Description
X901		SVQ43U452	Crystal, 4.5MHz, Counter Oscillator

LAMP

Ref. No.		Part No.	Part Name & Description
PL1		XAMR73S200A	Lamp, Frequency Meter, 6.3V, 0.25A

FLUORESCENT DISPLAY TUBE

Ref. No.		Part No.	Part Name & Description
FL		SAD7MT29ZA	Fluorescent Display Tube

SWITCHES

Ref. No.		Part No.	Part Name & Description
S1 ～ 12		SSG1	Switch, Memory/Preset/FM-AM/Manual
S14		SSS43	Switch, FM/AM Allocation
S15, 16, 407		SSH399	Switch, Subsonic, FM Muting, Auto Scan
S401 ～ 403		SSH397	Switch, Input Selector
S404 ～ 406		SSH3005	Switch, Tape Monitor & Loudness
S601, 602		SSH2001	Switch, Speakers Selector
S701	⚠	ESB90144T	Switch, Power

RESISTORS

Ref. No.		Part No.	Part Name & Description
R1	⚠	**ERD50TJ823**	Carbon, 82kΩ, 1/2W, ± 5%
R2		**RRD18XK472**	Chip, 4.7kΩ, 1/8W, ± 10%
R3		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R4		**RRD18XK100**	Chip, 10Ω, 1/8W, ± 10%
R5		**RRD18XK101**	Chip, 100Ω, 1/8W, ± 10%
R6		**RRD18XK472**	Chip, 4.7kΩ, 1/8W, ± 10%
R7		**RRD18XK474**	Chip, 470kΩ, 1/8W, ± 10%
R8		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R9		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R10		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%
R11		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R12		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R13		**RRD18XK272**	Chip, 2.7kΩ, 1/8W, ± 10%
R14		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R15		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R16		**RRD18XK332**	Chip, 3.3kΩ, 1/8W, ± 10%
R17		**RRD18XK273**	Chip, 27kΩ, 1/8W, ± 10%
R18	⚠	**ERD50FJ472**	Carbon, 4.7kΩ, 1/2W, ± 5%
R101		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R102		**RRD18XK391**	Chip, 390Ω, 1/8W, ± 10%
R103		**RRD18XK561**	Chip, 560Ω, 1/8W, ± 10%
R104		**RRD18XK391**	Chip, 390Ω, 1/8W, ± 10%
R105		**ERO25CKF3302**	Metal Film, 33kΩ, 1/4W, ± 1%
R108		**RRD18XK273**	Chip, 27kΩ, 1/8W, ± 10%
R109		**ERD25FJ470**	Carbon, 47Ω, 1/8W, ± 5%
R110		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R111		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R112		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R113		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R114		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R115		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R116		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R117		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R118		**RRD18XK561**	Chip, 560Ω, 1/8W, ± 10%
R119		**RRD18XK222**	Chip, 2.2kΩ, 1/8W, ± 10%
R120		**RRD18XK561**	Chip, 560Ω, 1/8W, ± 10%
R121		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R122		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R123		**RRD18XK332**	Chip, 3.3kΩ, 1/8W, ± 10%
R124. 125		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R126		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R128		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R130		**RRD18XK472**	Chip, 4.7kΩ, 1/8W, ± 10%
R133		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R134		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R135		**RRD18XK823**	Chip, 82kΩ, 1/8W, ± 10%
R136		**RRD18XK393**	Chip, 39kΩ, 1/8W, ± 10%
R137		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R138		**RRD18XK683**	Chip, 68kΩ, 1/8W, ± 10%
R139		**RRD18XK272**	Chip, 2.7kΩ, 1/8W, ± 10%
R199		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R201		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R202		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%
R203		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R204		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R205		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R206		**RRD18XK123**	Chip, 12kΩ, 1/8W, ± 10%
R209		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R210		**RRD18XK101**	Chip 100Ω, 1/8W, ± 10%
R212		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R213		**RRD18XK101**	Chip, 100Ω, 1/8W, ± 10%
R214, 215		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R216		**RRD18XK562**	Chip, 5.6kΩ, 1/8W, ± 10%
R217		**RRD18XK682**	Chip, 6.8kΩ, 1/8W, ± 10%
R218		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R219		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%
R220		**RRD18XK183**	Chip, 18kΩ, 1/8W, ± 10%
R221		**RRD18XK122**	Chip, 1.2kΩ, 1/8W, ± 10%
R222		**RRD18XK822**	Chip, 8.2kΩ, 1/8W, ± 10%
R223		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R224		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R225		**ERO25CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R227		**RRD18XK821**	Chip, 820Ω, 1/8W, ± 10%
R228		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R301		**ERD25FJ220**	Carbon, 22Ω, 1/4W, ± 5%
R302		**RRD18XK334**	Chip, 330kΩ, 1/8W, ± 10%
R303		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R304		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R305, 306		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R307, 308		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R309, 310		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R311, 312		**RRD18XK562**	Chip, 5.6kΩ, 1/8W, ± 10%
R313, 314		**RRD18XK472**	Chip, 4.7kΩ, 1/8W, ± 10%
R315, 316		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R317		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R319		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R320		**RRD18XK153**	Chip, 15kΩ, 1/8W, ± 10%
R321		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R322		**RRD18XK124**	Chip, 120kΩ, 1/8W, ± 10%
R323		**RRD18XK392**	Chip, 3.9kΩ, 1/8W, ± 10%
R324		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R325		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R327		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R328		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R401, 402		**RRD18XK221**	Chip, 220Ω, 1/8W, ± 10%
R403, 404		**ERO25CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R405		**ERO25CKF8202**	Metal Film, 82kΩ, 1/4W, ± 1%
R406		**ERO25CKF8202**	Metal Film, 82kΩ, 1/4W, ± 1%
R407		**RRD18XK271**	Chip, 270Ω, 1/8W, ± 10%
R408		**ERD25FJ271**	Carbon, 270Ω, 1/4W, ± 5%
R409, 410		**RRD18XK680**	Chip, 68Ω, 1/8W, ± 10%
R411, 412		**RRD18KX184**	Chip, 180kΩ, 1/8W, ± 10%
R413, 414		**RRD18XK123**	Chip, 12kΩ, 1/8W, ± 10%
R415, 416		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R417, 418		**RRD18XK221**	Chip, 220kΩ, 1/8W, ± 10%
R419, 420		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R421, 422		**RRD18XK222**	Chip, 2.2kΩ, 1/8W, ± 10%
R423, 424		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R425, 426		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R427, 428		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R429		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R430		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%
R433, 434		**RRD18XK822**	Chip, 8.2kΩ, 1/8W, ± 10%
R435, 436		**RRD18XK822**	Chip, 8.2kΩ, 1/8W, ± 10%
R437, 438		**RRD18XK822**	Chip, 8.2kΩ, 1/8W, ± 10%
R439, 440		**RRD18XK391**	Chip, 390Ω, 1/8W, ± 10%
R441, 442		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R445, 446		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R447, 448		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R501, 502		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R503, 504		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R505, 506		**RRD18XK392**	Chip, 3.9kΩ, 1/8W, ± 10%
R507, 508		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R509, 510		**RRD18XK102**	Chip, 1kΩ, 1/8W, ± 10%
R601, 602		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R603, 604		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R605, 606		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R607, 608		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R611, 612		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R613, 614	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R615, 616		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R617, 618		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R619, 620	⚠	**ERD50FJ100**	Carbon, 10Ω, 1/2W, ± 5%
R621, 622		**ERG1ANJ331**	Metal Oxide, 330Ω, 1W, ± 5%
R623, 624		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R625	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R627, 628[M] only		**ERD50FJ100**	Carbon, 10Ω, 1/2W, ± 5%
R701, 702		**ERG1ANJ122**	Metal Oxide, 1.2kΩ, 1W, ± 5%
R703		**ERG1ANJ152**	Metal Oxide, 1.5kΩ, 1W, ± 5%
R704		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R705		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
R706		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R707		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R708		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R709, 710		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R711		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R713	⚠	**ERD50FJ332**	Carbon, 3.3kΩ, 1/2W, ± 5%
R717	⚠	**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R718	⚠	**ERD50FJ222**	Carbon, 2.2kΩ, 1/2W, ± 5%
R719		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R720		**ERG3ANJ820**	Metal Oxide, 82Ω, 3W, ± 5%
R721		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R722		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R723		**ERG2ANJ331**	Metal Oxide, 330Ω, 2W, ± 5%
R724		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R725	⚠	**ERD25FJ120**	Carbon, 12Ω, 1/4W, ± 5%
R726		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R727		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R728	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R729	⚠	**ERD50FJ390**	Carbon, 39Ω, 1/2W, ± 5%
R730		**ERC12ZGK335**	Solid, 3.3MΩ, 1/2W, ± 10%
R731, 732		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R901		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R902		**RRD18XK821**	Chip, 820Ω, 1/8W, ± 10%
R903		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R904		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R905		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R906, 907		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%

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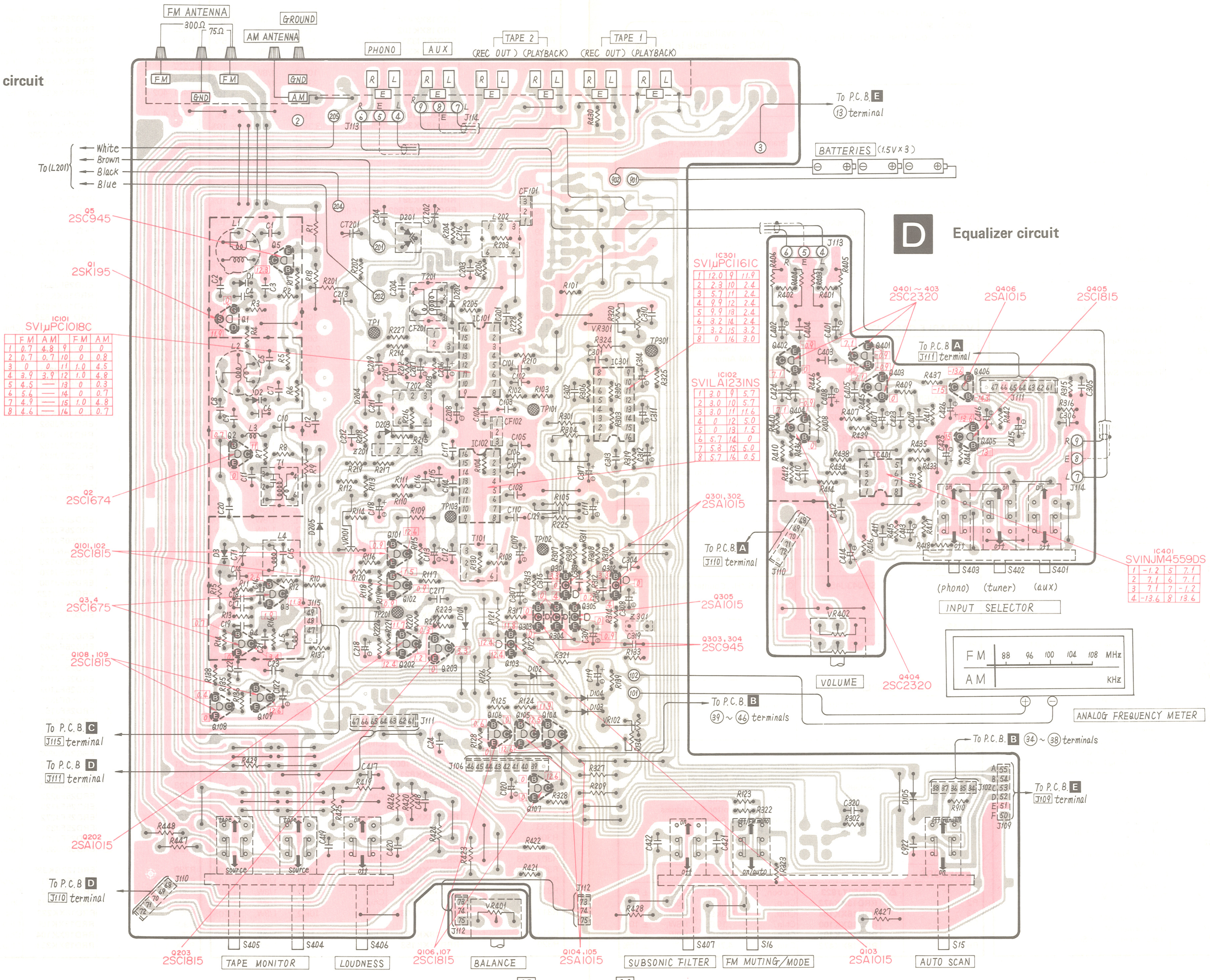
■ PRINTED CIRCUIT BOARD

🟥 Ground (Earth) lines


A
Tuner circuit
D
Equalizer circuit
FM ANTENNA
300Ω
75Ω
GROUND
AM ANTENNA
FM
GND
AM
PHONO
AUX
TAPE 2
TAPE 1
(REC OUT) (PLAYBACK)
To P.C.B E ⑬ terminal
BATTERIES (1.5V×3)
To (L201)
White
Brown
Black
Blue
Q5 2SC945
Q1 2SK195
Q2 2SC1674
Q101, 102 2SC1815
Q3, 4 2SC1675
Q108, 109 2SC1815
To P.C.B C J115 terminal
To P.C.B D J111 terminal
Q202 2SA1015
To P.C.B D J110 terminal
Q203 2SC1815
TAPE MONITOR
LOUDNESS
Q106, 107 2SC1815
BALANCE
Q104, 105 2SA1015
SUBSONIC FILTER
FM MUTING/MODE
Q103 2SA1015
AUTO SCAN
Q401 ~ 403 2SC2320
Q406 2SA1015
Q405 2SC1815
To P.C.B A J111 terminal
Q301, 302 2SA1015
To P.C.B A J110 terminal
Q305 2SA1015
Q303, 304 2SC945
Q404 2SC2320
To P.C.B B ㊴ ~ ㊻ terminals
To P.C.B B ㉞ ~ ㊳ terminals
To P.C.B E J109 terminal
(phono) (tuner) (aux)
INPUT SELECTOR
VOLUME
FM 88 96 100 104 108 MHz
AM KHz
ANALOG FREQUENCY METER
S401
S402
S403
S404
S405
S406
S407
S15
S16
VR401
VR402

IC101
SVIμPC1018C

	FM	AM		FM	AM
1	0.7	4.8	9	0	0
2	0.7	0.7	10	0	0.8
3	0	0	11	1.0	4.5
4	3.9	3.9	12	1.0	4.8
5	4.5	—	13	0	0.3
6	5.6	—	14	0	0.7
7	4.9	—	15	1.0	4.8
8	4.6	—	16	0	0.7

IC301
SVIμPC1161C

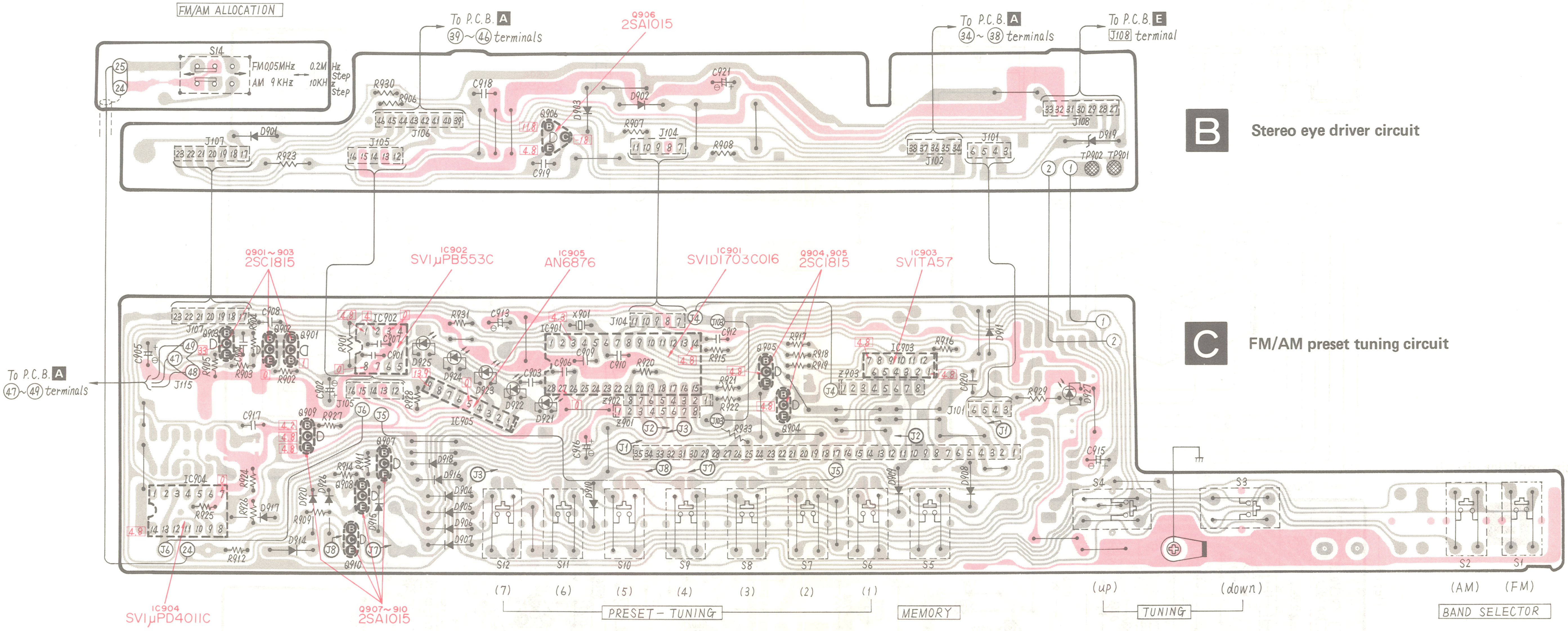
1	12.0	9	11.9
2	2.3	10	2.4
3	5.7	11	2.4
4	9.9	12	2.4
5	9.9	13	2.4
6	3.2	14	2.4
7	3.2	15	3.2
8	0	16	3.0

IC102
SVILA1231NS

1	3.0	9	5.7
2	3.0	10	5.7
3	3.0	11	11.6
4	0	12	5.0
5	0	13	1.5
6	5.7	14	0
7	5.8	15	5.0
8	5.7	16	0.5

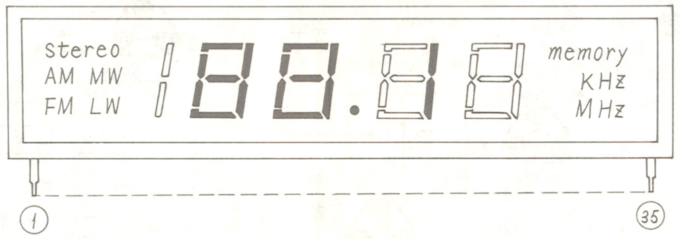
IC401
SVINJM4559DS

1	-1.2	5	7.1
2	7.1	6	7.1
3	7.1	7	-1.2
4	-13.6	8	13.6


FM/AM ALLOCATION
S14
FM 0.05MHz 0.2MHz Step
AM 9KHz 10KHz Step
To P.C.B. A
39~46 terminals
Q906
2SA1015
To P.C.B. A
34~38 terminals
To P.C.B. E
J108 terminal
To P.C.B. A
47~49 terminals
Q901~903
2SC1815
IC902
SVIμPB553C
IC905
AN6876
IC901
SVID1703C016
Q904, 905
2SC1815
IC903
SVITA57
IC904
SVIμPD4011C
Q907~910
2SA1015
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
(7)
(6)
(5)
(4)
(3)
(2)
(1)
PRESET-TUNING
MEMORY
(up)
(down)
TUNING
(AM)
(FM)
BAND SELECTOR

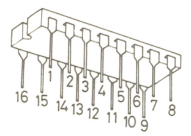
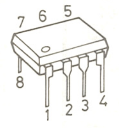
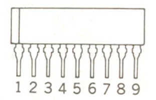
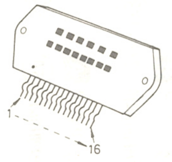
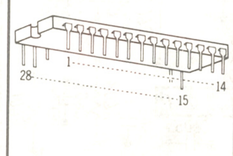
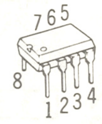
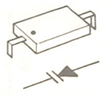
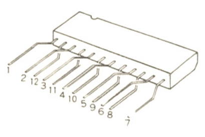
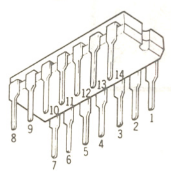
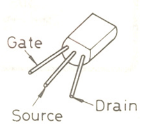
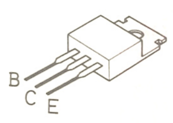
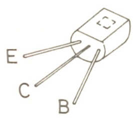
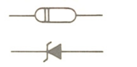
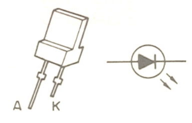
B Stereo eye driver circuit

C FM/AM preset tuning circuit


stereo
AM MW
FM LW
memory
KHz
MHz
1
35

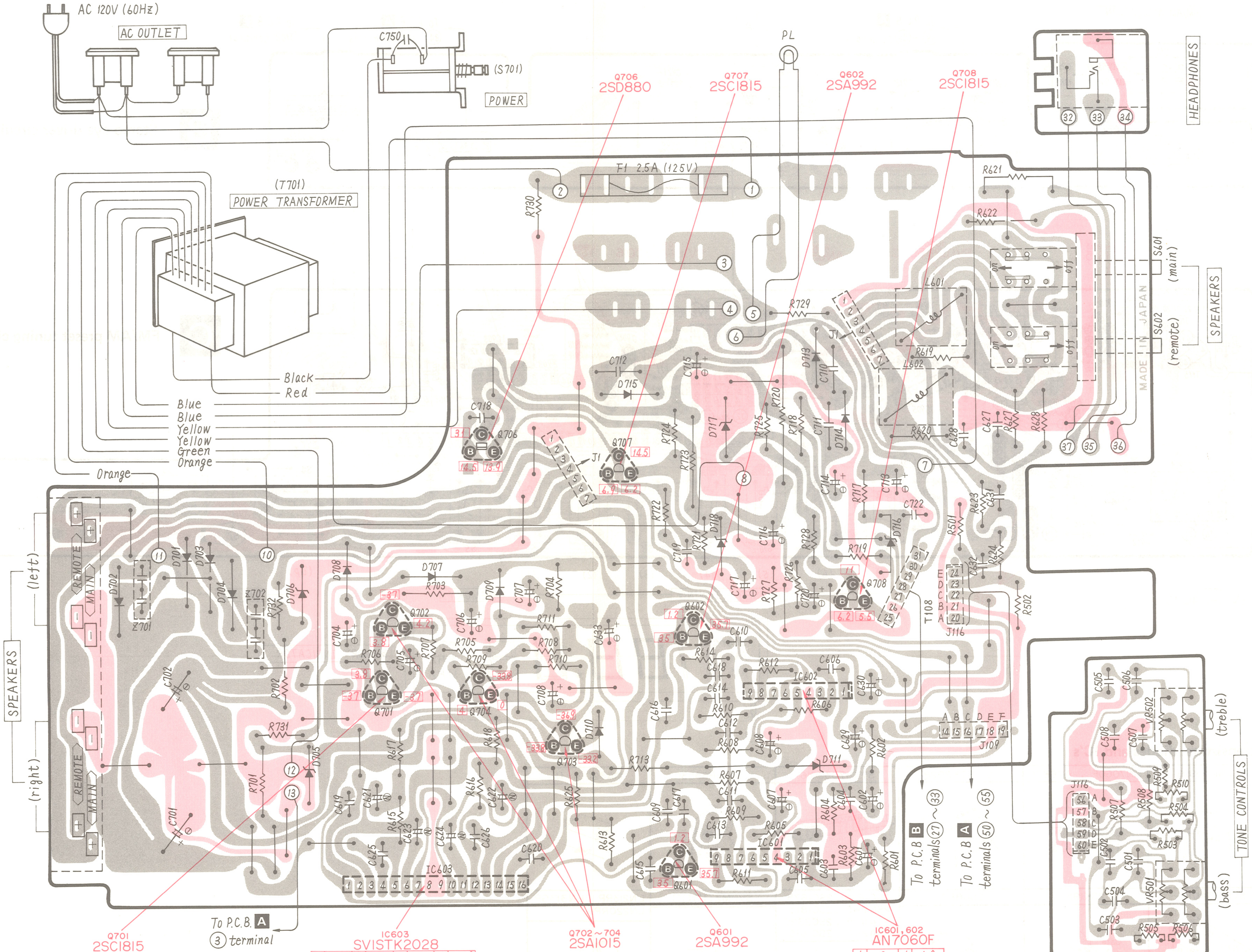
MEMORY INDICATOR

• Terminal guide of transistors, diodes and IC's

SVIμPC1018C, SVILA1231NS SVIμPC1161C	SVINJM4559DS	AN7060F, AN6876	SVISTK2028	SVID1703C016	SVIμPB553C	MA3206I-N
						
SVITA57	SVIμPD4011C	2SK195	2SD880	2SC1674, 2SC1675 2SC945, 2SC1815 2SA1015, 2SC2320 2SA992, 2SC1815	SVDMZ	LN213RP, LN313GP LN220RP
						

Main amplifier circuit

E

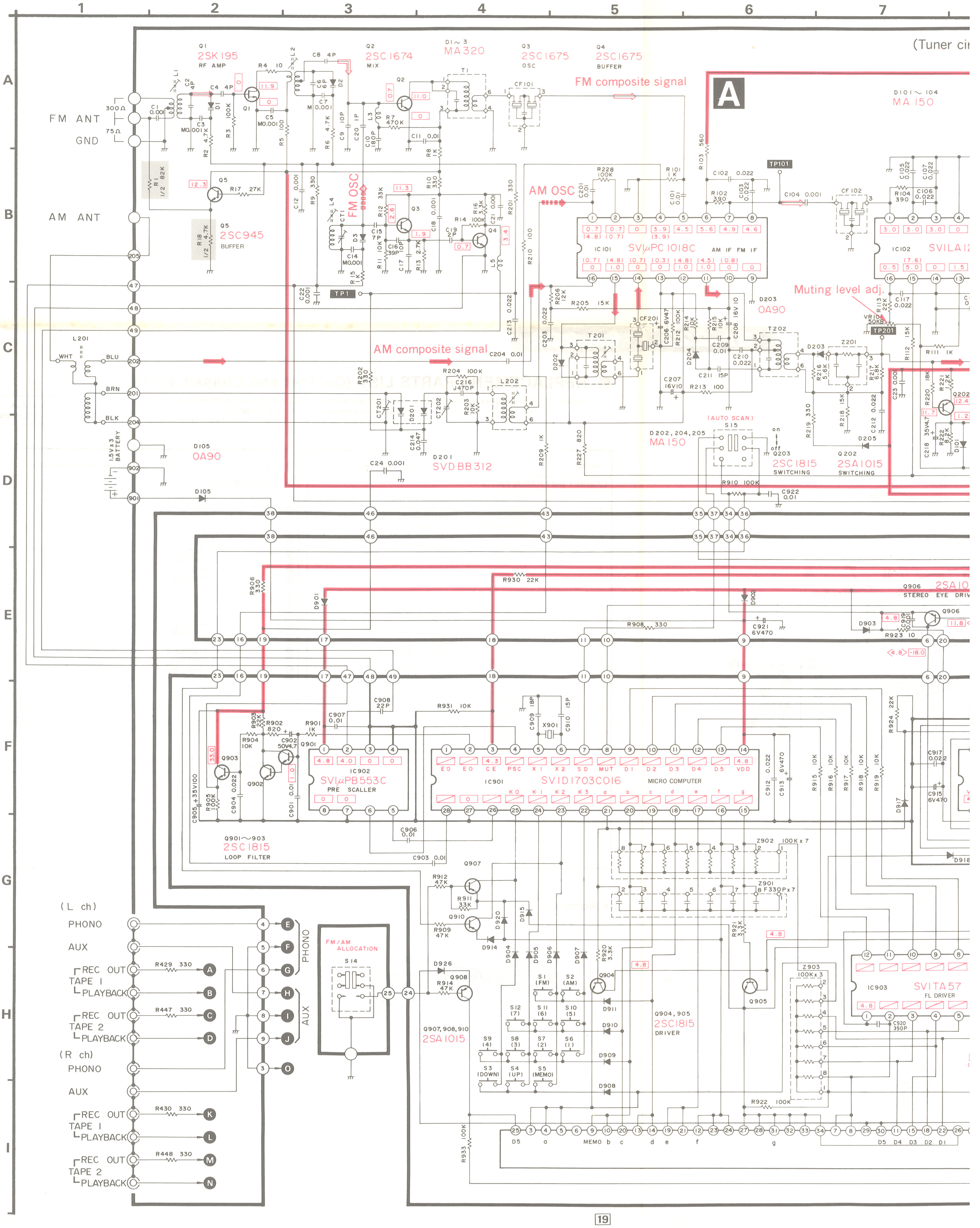

AC 120V (60Hz)
AC OUTLET
C750
(S701)
POWER
PL
(T701)
POWER TRANSFORMER
Black
Red
Blue
Blue
Yellow
Yellow
Green
Orange
Orange
F1 2.5A (125V)
Q706
2SD880
Q707
2SC1815
Q602
2SA992
Q708
2SC1815
HEADPHONES
S601 (main)
S602 (remote)
SPEAKERS
MADE IN JAPAN
L601
L602
SPEAKERS
(left)
(right)
REMOTE
MAIN
T108
J116
J109
To P.C.B. B terminals (27)~(33)
To P.C.B. A terminals (50)~(55)
(treble)
TONE CONTROLS
(bass)
IC603
IC602
IC601
To P.C.B. A
③ terminal
Q701
2SC1815
Q702~704
2SA1015
Q601
2SA992
IC601, 602
AN7060F
IC603
SVISTK2028

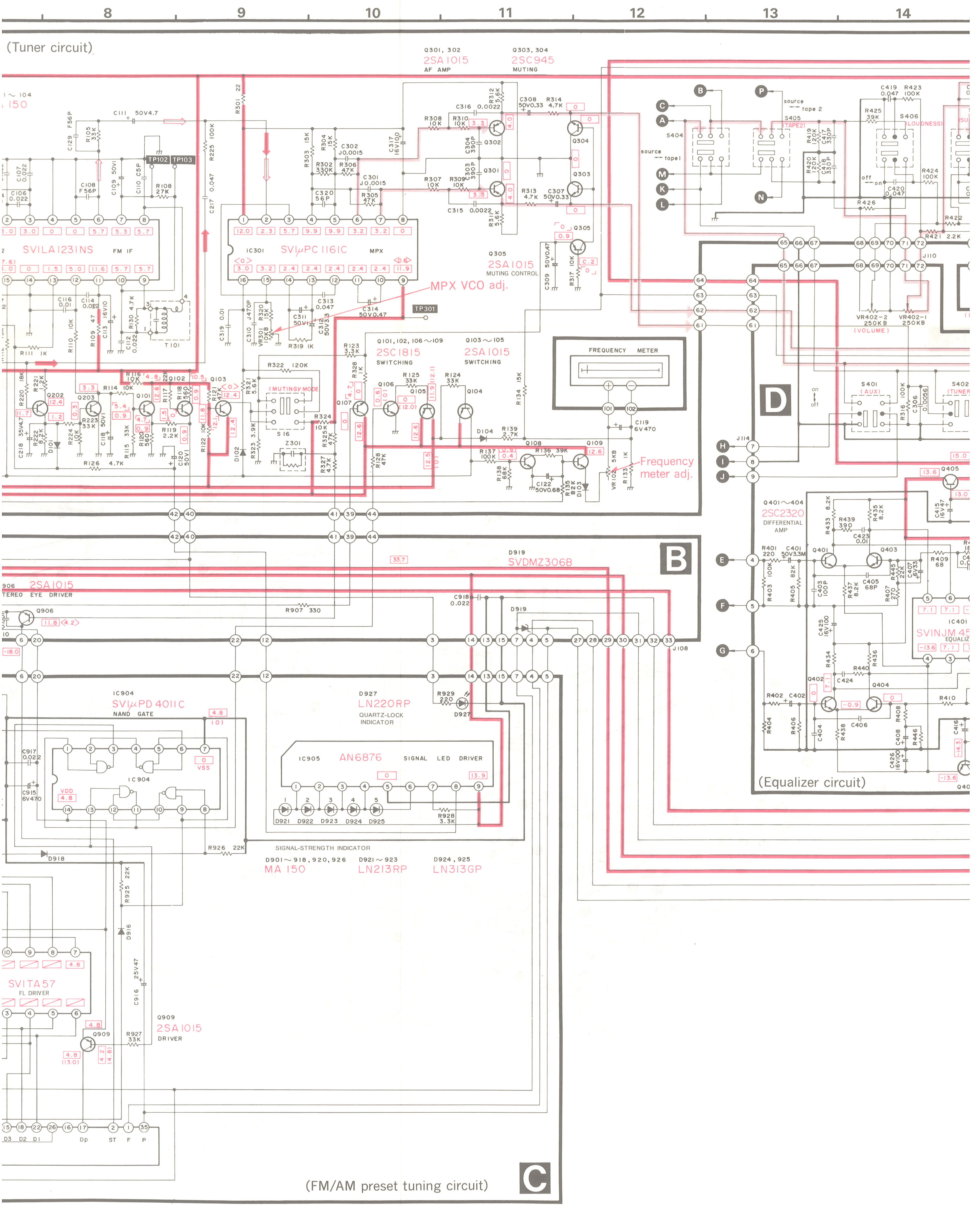
IC603
SVISTK2028

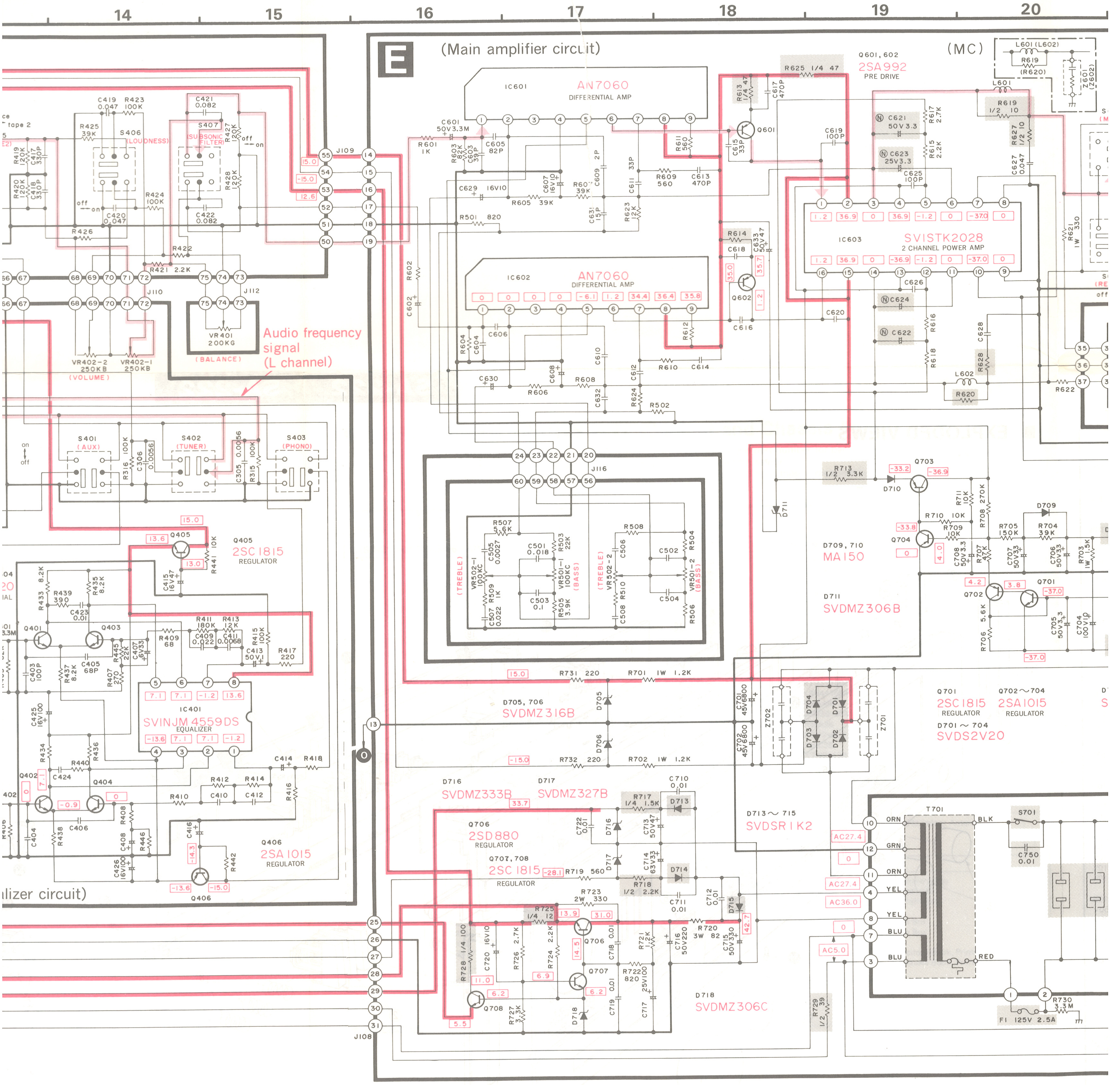
1	1.2	5	-1.2	9	0	13	-36.9
2	36.9	6	0	10	-37.0	14	0
3	0	7	-37.0	11	0	15	36.9
4	36.9	8	0	12	-1.2	16	1.2

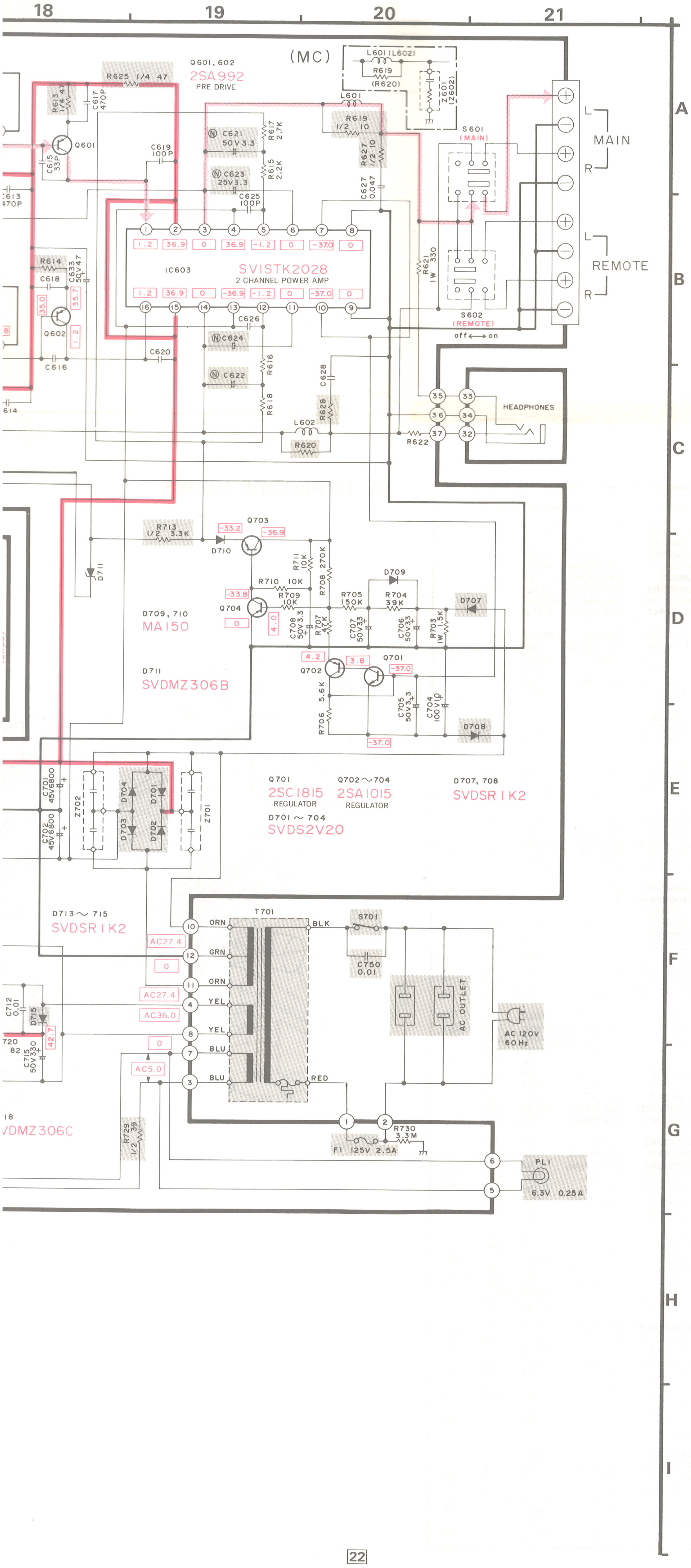
IC601, 602
AN7060F

1	0	6	1.2
2	0	7	34.4
3	0	8	36.4
4	0	9	35.8
5	-6.1		—


(Tuner ci
A
Q1 2SK195 RF AMP
Q2 2SC1674 MIX
D1～3 MA320
Q3 2SC1675 OSC
Q4 2SC1675 BUFFER
FM composite signal
D101～104 MA150
FM ANT
300Ω
75Ω
GND
AM ANT
Q5 2SC945 BUFFER
FM OSC
AM OSC
IC101 SVIμPC1018C AM IF FM IF
IC102 SVILA1
TP101
TP1
TP201
Muting level adj.
VR101 50KB
D203 OA90
AM composite signal
T201
T202
L201
WHT
BLU
BRN
BLK
L202
D201 SVDBB312
D202, 204, 205 MA150
(AUTO SCAN) S15
on
off
Q203 2SC1815 SWITCHING
Q202 2SA1015 SWITCHING
D105 OA90
1.5V×3 BATTERY
Q906 2SA10 STEREO EYE DRIV
IC902 SVIμPB553C PRE SCALLER
Q901～903 2SC1815 LOOP FILTER
IC901 SVID1703C016 MICRO COMPUTER
EO EO CE PSC XI X2 SD MUT D1 D2 D3 D4 D5 VDD
KO K1 K2 K3 a b c d e f g
X901
Z902 100K×7
Z901 8F330P×7
Z903 100K×3
Q907
Q910
Q908
Q907, 908, 910 2SA1015
Q904, 905 2SC1815 DRIVER
IC903 SVITA57 FL DRIVER
S1 (FM)
S2 (AM)
S12 (7)
S11 (6)
S10 (5)
S9 (4)
S8 (3)
S7 (2)
S6 (1)
S3 (DOWN)
S4 (UP)
S5 (MEMO)
FM/AM ALLOCATION
S14
(L ch)
PHONO
AUX
REC OUT TAPE 1 PLAYBACK
REC OUT TAPE 2 PLAYBACK
(R ch)
PHONO
AUX
REC OUT TAPE 1 PLAYBACK
REC OUT TAPE 2 PLAYBACK
R429 330
R447 330
R430 330
R448 330
A B C D E F G H I J K L M N O
D5 a MEMO b c d e f g D5 D4 D3 D2 D1
1 2 3 4 5 6 7
A B C D E F G H I


8
9
10
11
12
13
14
(Tuner circuit)
Q301, 302
2SA1015
AF AMP
Q303, 304
2SC945
MUTING
TP102
TP103
TP301
SVILA1231NS
FM IF
IC301
SVIμPC1161C
MPX
MPX VCO adj.
Q305
2SA1015
MUTING CONTROL
Q101, 102, 106～109
2SC1815
SWITCHING
Q103～105
2SA1015
SWITCHING
(MUTING MODE)
S16
Z301
FREQUENCY METER
Frequency meter adj.
VR102
T101
D
B
C
J114
J110
J108
S404
S405
S406
(LOUDNESS)
source
tape 1
tape 2
(TAPE2)
VR402-2 250KB
VR402-1 250KB
(VOLUME)
S401
(AUX)
S402
(TUNER
Q401～404
2SC2320
DIFFERENTIAL AMP
IC401
SVINJM45
EQUALIZ
(Equalizer circuit)
D919
SVDMZ306B
2SA1015
STEREO EYE DRIVER
Q906
IC904
SVIμPD4011C
NAND GATE
VDD
VSS
D927
LN220RP
QUARTZ-LOCK INDICATOR
IC905
AN6876
SIGNAL LED DRIVER
D921
D922
D923
D924
D925
SIGNAL-STRENGTH INDICATOR
D901～918, 920, 926
MA150
D921～923
LN213RP
D924, 925
LN313GP
D918
D916
SVITA57
FL DRIVER
Q909
2SA1015
DRIVER
D3
D2
D1
Dp
ST
F
P
(FM/AM preset tuning circuit)


14
15
16
17
18
19
20
E
(Main amplifier circuit)
(MC)
IC601
AN7060
DIFFERENTIAL AMP
IC602
AN7060
DIFFERENTIAL AMP
Q601, 602
2SA992
PRE DRIVE
IC603
SVI STK2028
2 CHANNEL POWER AMP
Q601
Q602
R625 1/4 47
L601 (L602)
R619 (R620)
Z601 (Z602)
S406 (LOUDNESS)
S407 (SUBSONIC FILTER)
J109
J110
J112
J116
VR401 200KG (BALANCE)
VR402-2 250KB
VR402-1 250KB
(VOLUME)
Audio frequency signal (L channel)
S401 (AUX)
S402 (TUNER)
S403 (PHONO)
Q405
2SC1815
REGULATOR
IC401
SVI NJM 4559DS
EQUALIZER
Q401
Q402
Q403
Q404
Q406
2SA1015
REGULATOR
(TREBLE)
(BASS)
VR502-1 100KC
VR501-1 100KC
VR502-2
VR501-2
D705, 706
SVDMZ316B
D709, 710
MA150
D711
SVDMZ306B
Q703
Q704
Q701
Q702
Q701
2SC1815
REGULATOR
Q702～704
2SA1015
REGULATOR
D701～704
SVDS2V20
D716
SVDMZ333B
D717
SVDMZ327B
Q706
2SD880
REGULATOR
Q707, 708
2SC1815
REGULATOR
D713～715
SVDSR1K2
D718
SVDMZ306C
T701
S701
ORN
GRN
YEL
BLU
BLK
RED
AC27.4
AC36.0
AC5.0
F1 125V 2.5A
R730 3.3M
J108
(…lizer circuit)


18
19
20
21
A
B
C
D
E
F
G
H
I
(MC)
Q601, 602
2SA992
PRE DRIVE
R625 1/4 47
R613 1/4 47
C617 470P
Q601
C615 33P
C613 470P
C619 100P
C621 50V3.3
C623 25V3.3
C625 100P
R617 2.7K
R615 2.2K
L601 (L602)
R619 (R620)
L601
R619 1/2 10
R627 1/2 10
C627 0.047
Z601 (Z602)
S601 (MAIN)
MAIN
REMOTE
L
R
IC603
SVISTK2028
2 CHANNEL POWER AMP
R621 1W 330
S602 (REMOTE)
off ⟷ on
R614
C618
C633 50V47
Q602
C626
C624
C622
C620
C616
R616
R618
C628
R628
L602
R620
R622
HEADPHONES
Q703
R713 1/2 3.3K
D710
D711
R711 10K
R708 270K
R710 10K
R709 10K
R705 150K
R704 39K
D709
D707
Q704
C708 50V3.3
R707 47K
C707 50V33
C706 50V33
R703 1W 1.5K
D709, 710
MA150
D711
SVDMZ306B
Q701
Q702
R706 5.6K
C705 50V3.3
C704 100V10
D708
C701 45V6800
C702 45V6800
Z702
D704
D701
D703
D702
Z701
Q701
2SC1815
REGULATOR
Q702∼704
2SA1015
REGULATOR
D701∼704
SVDS2V20
D707, 708
SVDSR1K2
D713∼715
SVDSR1K2
T701
ORN
GRN
ORN
YEL
YEL
BLU
BLU
BLK
RED
S701
C750 0.01
AC OUTLET
AC 120V 60Hz
C712 0.01
D715
C715 50V330
R729 1/2 39
R730 3.3M
F1 125V 2.5A
PL1
6.3V 0.25A
SVDMZ306C

■ SCHEMATIC DIAGRAM

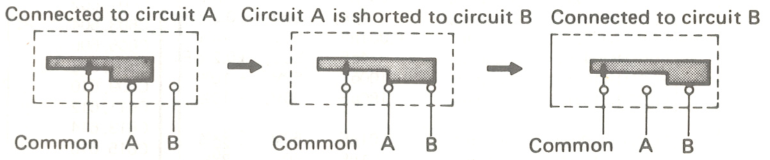
Note:

1. **S1, 2** : Band selectors switch.
   [S1 – FM
   S2 – AM]
2. **S3, 4** : Tuning switch
   [S3 – down
   S4 – up]
3. **S5** : Memory switch.
4. **S6 ∼ 12** : Preset-tuning switch.
   [S6 – 1 ch, S7 – 2 ch, S8 – 3 ch, S9 – 4 ch,
   S10 – 5 ch, S11 – 6 ch, S12 – 7 ch]
5. **S14** : FM/AM allocation switch in "**FM 0.2MHz/AM 10kHz step**" position.
   FM 0.05MHz/AM 9kHz step ⟷ FM 0.2MHz/AM 10kHz step
6. **S15** : Automatic-scan switch in "**on**" position.
   on ⟷ off (manual)
7. **S16** : FM muting/FM mode switch in "**on/FM auto**" position.
   on/FM auto ⟷ off/FM mono
8. **S401 ∼ 403** : Input selectors switch in "**tuner**" position.
   [S401 – aux. S402 – tuner, S403 – phono]
9. **S404, 405** : Tape-monitor selectors switch in "**source**" position.
   [S404 – tape 1, S405 – tape 2]
10. **S406** : Loudness switch in "**off**" position.
11. **S407** : Subsonic filter switch in "**off**" position.
12. **S601, 602** : Speaker selectors switch in "**main**" position.
    [S601 – main, S602 – remote]
13. **S701** : Power switch in "**on**" position.
14. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ▭ stand for DC voltage in FM/AM signal reception mode.
    * Figures in ⟨ ⟩ stand for DC voltage in FM stereo signal receptiom mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM (no signal) muting to on mode.
    * Figures in ( ) stand for DC voltage with the band selectors circuit set at AM.
15. Transistor and IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.
16. Signal lines
    - ⇨ FM composite signal
    - ➡ Audio frequency signal
    - ▬ Positive voltage lines
    - ➡ / ⇢ AM signal

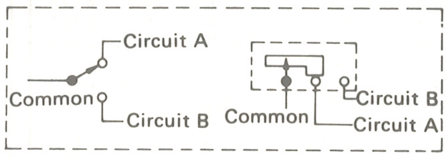
Shorting Switch (S401, 402, 403, 406 and 407)

This unit uses a shorting switch. As illustated below, the circuit is shorted to the next circuit without being opened.

In the circuit diagram, the shaded area represents the common terminal.


Connected to circuit A
Circuit A is shorted to circuit B
Connected to circuit B
Common
A
B
Common
A
B
Common
A
B

An example of circuit diagram


Circuit A
Common
Circuit B
Common
Circuit B
Circuit A

IMPORTANT SAFETY NOTICE

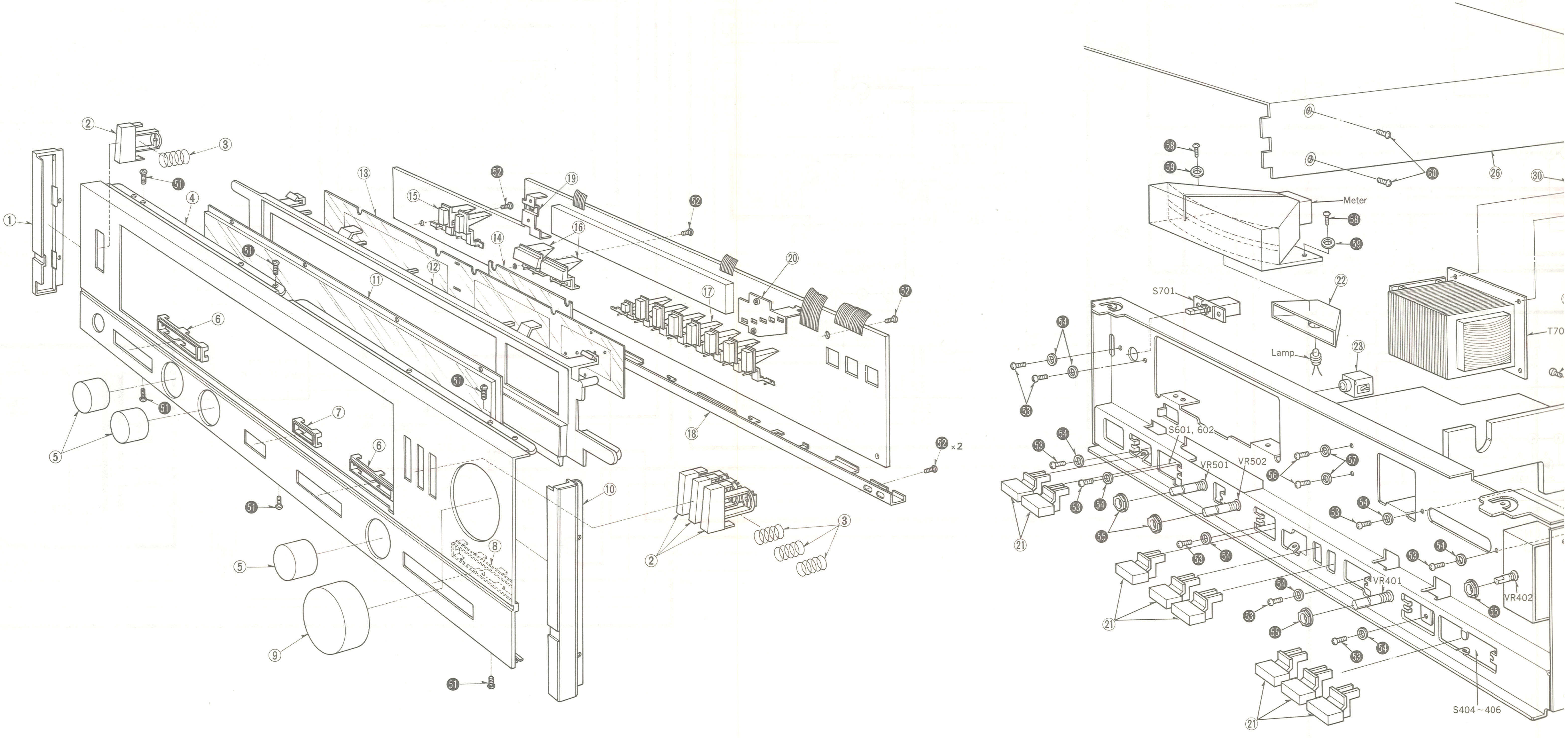
The shaded area on this schematic diagram incorporates special features important for safety. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

Continued from page 12

Ref. No.		Part No.	Part Name & Description
R908		**RRD18XK331**	Chip, 330Ω, 1/8W, ± 10%
R909		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R910		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R911		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R912		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R914		**RRD18XK473**	Chip, 47kΩ, 1/8W, ± 10%
R915, 916		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R917, 918		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R919		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R920, 921		**RRD18XK332**	Chip, 3.3kΩ, 1/8W, ± 10%
R922		**RRD18XK104**	Chip, 100kΩ, 1/8W, ± 10%
R923		**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R924, 925		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R926		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R927		**RRD18XK333**	Chip, 33kΩ, 1/8W, ± 10%
R928		**RRD18XK332**	Chip, 3.3kΩ, 1/8W, ± 10%
R929		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R930		**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%
R931		**RRD18XK103**	Chip, 10kΩ, 1/8W, ± 10%
R933		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
CAPACITORS			
C1		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C2		ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C3		ECKD1H102MD	Ceramic, 0.001μF, 50V, ± 20%
C4		ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C5		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C6		ECCD1H060CC	Ceramic, 6pF, 50V, ±0.25pF
C7		ECKD1H102MD	Ceramic, 0.001μF, 50V, ± 20%
C8		ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C9		ECCD1H100KC	Ceramic, 100pF, 50V, ± 10%
C10		ECCD1H181K	Ceramic, 180pF, 50V, ± 10%
C11		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C12		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C14		ECKD1H102MD	Ceramic, 0.001μF, 50V, ± 20%
C15		ECUX1H070DC	Chip, 7pF, 50V, ± 0.5pF
C16		ECUX1H390KC	Chip, 39pF, 50V, ± 10%
C17		ECUX1H100KC	Chip 10pF, 50V, ± 10%
C18		ECUX1H102ZF	Chip, 0.001μF, 50V, +80 −20%
C19		ECUX1H020CC	Chip, 2pF, 50V, ±0.25pF
C20		ECUX1H010CC	Chip, 1pF, 50V, ±0.25pF
C21, 22		ECUX1H102ZF	Chip, 0.001μF, 50V, +80 −20%
C23, 24		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C101		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C102		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C103		ECUX1H223ZF	Chip, 0.022μF, 50V, +80 −20%
C104		ECKD1H102MD	Ceramic, 0.001μF, 50V, ± 20%
C105, 106		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C107		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C108		ECCD1H560K	Ceramic, 56pF, 50V, ± 10%
C109		**ECEA50Z1**	Electrolytic, 1μF, 50V
C110		ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C111		**ECEA50M4R7R**	Electrolytic, 4.7μF, 50V
C112		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C113		**ECEA1HS100**	Electrolytic, 10μF, 50V
C114		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C116		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C117		ECUX1H223ZF	Chip, 0.022μF, 50V, +80 −20%
C118		**ECEA50Z1**	Electrolytic, 1μF, 50V
C119		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C120		**ECEA50Z1**	Electrolytic, 1μF, 50V
C122		**ECEA50ZR68**	Electrolytic, 0.68μF, 50V
C129		ECCD1H560K	Ceramic, 56pF, 50V, ± 10%
C201		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C203		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C204		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C206		**ECEA1AS470**	Electrolytic, 47μF, 10V
C207, 208		**ECEA1HS100**	Electrolytic, 10μF, 50V
C209		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C210		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C211		ECCD1H150KC	Ceramic, 15pF, 50V, ± 10%
C212, 213		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C214		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C216		ECQP1471JZ	Polypropylene, 470pF, 100V, ± 5%
C217		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C218		**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C301, 302		ECQM1H152JZ	Polyester, 0.0015μF, 50V, ± 5%
C303, 304		ECUX1H391KR	Chip, 390pF, 50V, ± 10%

Ref. No.		Part No.	Part Name & Description
C305, 306		ECQM1H562KZ	Polyester, 0.0056μF, 50V, ± 10%
C307, 308		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C309		**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C310		ECQP1471JZ	Polypropylene, 470pF, 100V, ± 5%
C311		**ECEA50Z1**	Electrolytic, 1μF, 50V
C312		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C313		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C314		**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C315, 316		ECQM1H222KZ	Polyester, 0.0022μF, 50V, ± 10%
C317		**ECEA1HS100**	Electrolytic, 10μF, 50V
C319		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C320		ECCD1H560K	Ceramic, 56pF, 50V, ± 10%
C401, 402		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C403, 403		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C405, 406		ECCD1H680K	Ceramic, 68pF, 50V, ± 10%
C407, 408		**ECEA1CS330**	Electrolytic, 33μF, 16V
C409, 410		ECQM1H223JZ	Polyester, 0.022μF, 50V, ± 5%
C411, 412		ECQM1H682JZ	Polyester, 0.0068μF, 50V, ± 5%
C413, 414		**ECEA50Z1**	Electrolytic, 1μF, 50V
C415, 416		**ECEA1ES470**	Electrolytic, 47μF, 25V
C417, 418		ECKD1H331KB	Ceramic, 330pF, 50V, ± 10%
C419, 420		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C421, 422		ECQM1H823KZ	Polyester, 0.082μF, 50V, ± 10%
C423, 424		ECKD1H103MD	Ceramic, 0.01μF, 50V, ± 20%
C425, 426		**ECEA1ES101**	Electrolytic, 100μF, 25V
C501, 502		ECQM1H183KZ	Polyester, 0.018μF, 50V, ± 10%
C503, 504		ECQM1H104KS	Polyester, 0.1μF, 50V, ± 10%
C505, 506		ECQM1H272KZ	Polyester, 0.0027μF, 50V, ± 10%
C507, 508		ECQM1H223KZ	Polyester, 0.022μF, 50V, ± 10%
C601, 602		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V,
C603, 604		ECCD1H390K	Ceramic, 39pF, 50V, ± 10%
C605, 606		ECCD1H820K	Ceramic, 82pF, 50V, ± 10%
C607, 608		**ECEA1HS100**	Electrolytic, 10μF, 50V
C609, 610		ECCD1H020C	Ceramic, 2pF, 50V, ±0.25pF
C611, 612		ECCD1H330K	Ceramic, 33pF, 50V, ± 10%
C613, 614		ECKD1H471KB	Ceramic, 470pF, 50V, ± 10%
C615, 616		ECCD1H330K	Ceramic, 33pF, 50V, ± 10%
C617, 618		ECKD1H471KB	Ceramic, 470pF, 50V, ± 10%
C619, 620		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C621, 622	⚠	ECEA1HN3R3S	Non-Polar Electrolytic, 3.3μF, 50V
C623, 624	⚠	ECEA1EN3R3S	Non-Polar Electrolytic, 3.3μF, 25V
C625, 626		ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C627, 628		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C629, 630		**ECEA1HS100**	Electrolytic, 10μF, 50V
C631, 632		ECCD1H150K	Ceramic, 15pF, 50V, ± 10%
C633		**ECEA1HS470**	Electrolytic, 47μF, 50V
C701, 702		**ECETS45V682U**	Electrolytic, 6800μF, 45V
C704		**ECEA2AS100**	Electrolytic, 10μF, 100V
C705		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C706, 707		**ECEA1JS330**	Electrolytic, 33μF, 63V
C708		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C710, 711		ECKD2H103PE	Ceramic, 0.01μF, 500V, +100 −0%
C712		ECKD2H103PE	Ceramic, 0.01μF, 500V, +100 −0%
C713		**ECEA1HS470**	Electrolytic, 47μF, 50V
C714		**ECEA1JS330**	Electrolytic, 33μF, 63V
C715		**ECEA1HS331**	Electrolytic, 330μF, 50V
C716		**ECEA1HS221**	Electrolytic, 220μF, 50V
C717		**ECEA1ES101**	Electrolytic, 100μF, 25V
C718, 719		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C720		**ECEA1HS100**	Electrolytic, 10μF, 50V
C722		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C750	⚠	ECKDMY103PF	Ceramic, 0.01μF, 125VAC, +100 −0%
C901		ECUX1H103ZF	Chip, 0.01μF, 50V, +80 −20%
C902		**ECEA50M4R7R**	Electrolytic, 4.7μF, 50V
C903		ECUX1H103ZF	Chip, 0.01μF, 50V, +80 −20%
C904		ECUX1H223ZF	Chip, 0.022μF, 50V, +80 −20%
C905		**ECEA1VS101**	Electrolytic, 100μF, 35V
C906, 907		ECUX1H103ZF	Chip, 0.01μF, 50V, +80 −20%
C908		ECUX1H220KC	Chip, 22pF, 50V, ± 10%
C909		ECUX1H180KC	Chip, 18pF, 50V, ± 10%
C910		ECUX1H150KC	Chip, 15pF, 50V, ± 10%
C912		ECUX1H223ZF	Chip, 0.022μF, 50V, +80 −20%
C913		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C915		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C916		**ECEA1ES470**	Electrolytic, 47μF, 25V
C917		ECUX1H223ZF	Chip, 0.022μF, 50V, +80 −20%
C918		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C919		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C920		ECUX1H391KR	Chip, 390pF, 50V, ± 10%
C921		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C922		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%

EXPLODED VIEWS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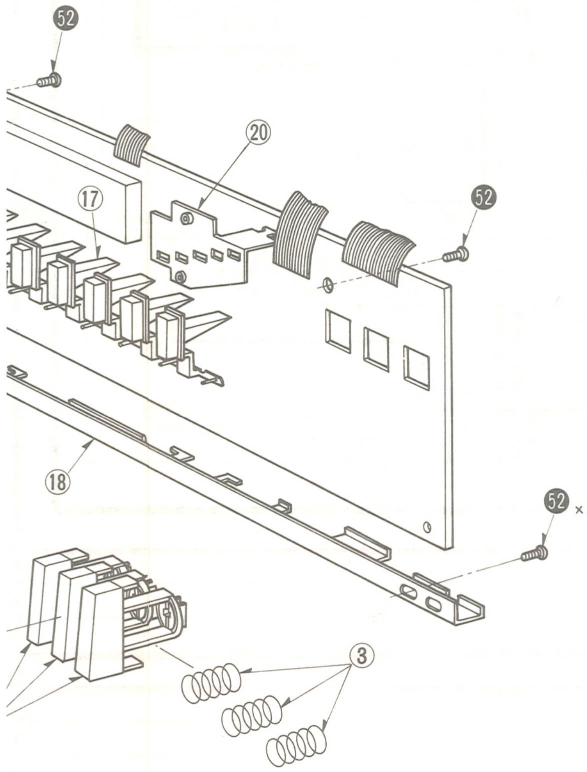
Meter
S701
Lamp
T70
S601, 602
VR501
VR502
VR401
VR402
S404~406



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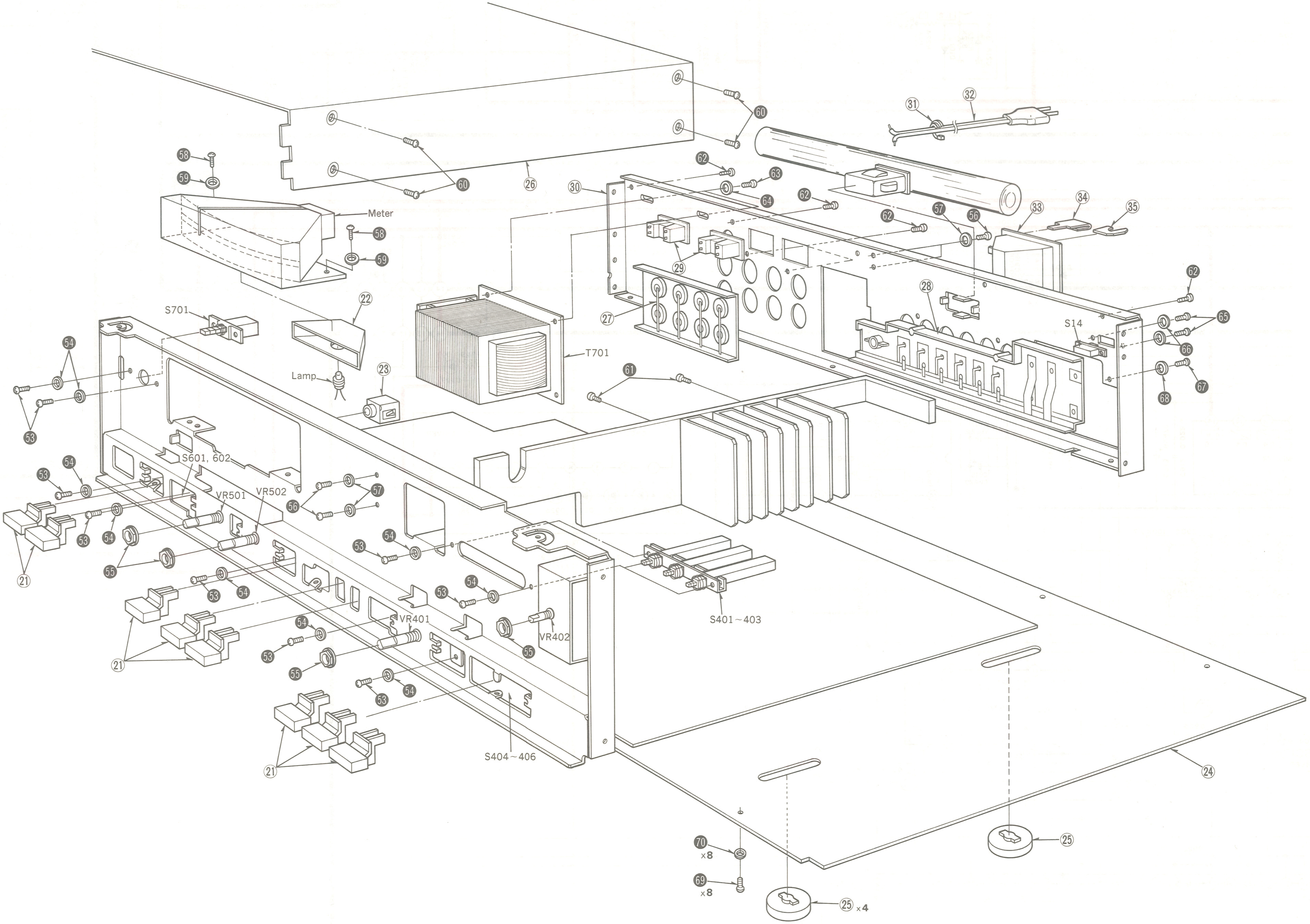


Meter
S701
Lamp
T701
S14
S601, 602
VR501
VR502
VR401
VR402
S401～403
S404～406
70 ×8
69 ×8
25 ×4

■ REPLACEMENT PARTS LIST (Cabinet and Chassis Parts)

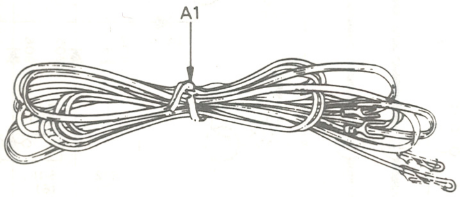
Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacture be used for safety.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

* [M] is available in U.S.A.
* [MC] is available in Canada.

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1		SGX6967	Ornament, Left Side
2		SBC321	Button, Power Input Selector
3		SUS163	Spring, Power Input Selector
4		SGWA222M	Front Panel
5		SBN973	Knob, Tone, Balance Control
6		SGX6957	Sleeve, Button
7		SGX6959	Sleeve, Button
8		SGX7001	Sleeve, Button
9		SBN971	Knob, Volume Control
10		SGX6969	Ornament, Right Side
11		SGU195	Transparent Cover
12		SGX6971	Ornament Plate
13		SDU51	Plate, Ornament
14		SDU53	Tinted Plate
15		SBC329	Button, FM. AM
16		SBC327	Button, Tuning
17		SBC325	Button, FM/AM Preset
18		SUW1735	Bracket, P.C.B.
19		SHR9539	Holder, L.E.D. (Quartz Lock)
20		SHR9537	Holder, L.E.D. (Signal Strength)
21		SBC323	Button, Push Switch
22		SMP301	Cover, Lamp
23		SJJ61	Jack, Headphone
24		SYU265	Bottom Cover
25		SKL255	Foot
26		SKC630S1	Cabinet Cover
27		SJF4813–1	Terminal Board, Speaker
28		SJF8029–4N	Terminal Board
29	⚠	SJSA66–2	Socket, AC Outlet
30		SGP2510A	Rear Panel
31		RHR111	Bushing, AC Cord
32	⚠	RJA9YA	AC Cord
33		SJB3005	Battery Case
34		SJC7	Battery Terminal
35		SJC9	Battery Terminal
		SSM173–1	Meter

Ref. No.		Part No.	Part Name & Description
SCREWS, WASHERS and NUTS			
(51)		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
(52)		**XTB3+10B**	Screw, Tapping, ⊕ 3 x 10
(53)		**XSN3+6S**	Screw, ⊕ 3 x 6
(54)		**XWA3B**	Washer, Spring, φ3
(55)		SNE4021	Nut, (Volume)
(56)		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
(57)		**XWC3B**	Washer, External Toothed Lock, φ3
(58)		**XTN3+10**	Screw, Tapping, ⊕ 3 x 10
(59)		**XWG3**	Washer, Plain, φ3
(60)		**XTB4+8BFZ**	Screw, Tapping, ⊕ 4 x 8
(61)		**XTB3+16B**	Screw, Tapping, ⊕ 3 x 16
(62)		**XTB3+10BFZ**	Screw, Tapping, ⊕ 3 x 10
(63)		**XSN4+10BVS**	Screw, ⊕ 4 x 10
(64)		**XWA4BFZ**	Washer, Spring, φ4
(65)		**XSN26+6BV**	Screw, ⊕ 26 x 6
(66)		**XWA26**	Washer, Spring, φ26
(67)		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
(68)		**XWC3B**	Washer, External Toothed Lock, φ3
(69)		**XTN3+12B**	Screw, Tapping, ⊕ 3 x 12
(70)		**XWG3**	Washer, Plain, φ3
ACCESSORY			
A1		SSA267	Cord, FM Indoor Antenna
PACKING PARTS			
P1		SPP649	Polyethylene Bag
P2		SPS2997	Pad, Left Side
P3		SPS2999	Pad, Right Side
P4 [M]		SPG2829	Carton Box
P4 [MC]		SPG2831	Carton Box
P5 [M]		SQF10655–2	Instrucitons Book, Printed Matter
P5 [MC]		SQF10657–1	Instructions Book, Printed Matter

• Accessory



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ORDER NO. SD81061961C4

Service Manual

FM/AM Stereo Receiver
SA-222
[PA], [PE]

Areas

* [PA] is available in for East PX.
* [PE] is available in European Military.

Please use this manual together with the service manual for Model No. SA-222 [M, MC] Order No. SD8012-1811.

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SA-222 [M, MC] (ORDER NO. SD8012-1811) →	SA-222 [PA, PE]			
COILS and TRANSFORMERS					
T701	SLT5M137	SLT5P217—W	Transformer, Power Source	1	
VARIABLE RESISTORS					
R136	RRD18XK393	**EVNK0AA00B54**	Frequency Meter Adjustment, 50kΩ (B)	1	
COMPONENT COMBINATIONS					
Z601, 602	Addition	ECQJ0517	Component Combination, 0.047μF, 10Ω	2	
FUSES					
F1	XBA1F25NU14	XBA2C20TR0	Fuse, T 2A (250V)	1	
F2	Addition	XBA2C10TR0	Fuse, T 1A (250V)	1	
F3, 4	Addition	XBA2C06TR0	Fuse, T 630mA (250V)	2	
SWITCHES					
S701	ESB90144T	ESB90159S	Switch, Power	1	
S702	Addition	ESE37200	Switch, Voltage Selector	1	
RESISTORS					
R105	ERO25CKF3302	ERO25CKF2702	Metal Film, 27kΩ, 1/4W, ± 1%	1	
R136	RRD18XK393	Deletion	....	0	
R199	ERD25TJ224	Deletion	....	0	
R303	RRD18XK153	**RRD18XK223**	Chip, 22kΩ, 1/8W, ± 10%	1	
R304	ERD25TJ153	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%	1	
R455, 456 457, 458	Addition	**RRD18XK472**	Chip, 4.7kΩ, 1/8W, ± 10%	4	
R459, 460	Addition	**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%	2	
R461, 462	Addition	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%	2	
R609, 610	Addition	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%	2	
CAPACITORS					
C301, 302	ECQM1H152JZ	ECQM1H122JZ	Polyester, 0.0012μF, 50V, ± 5%	2	
C305, 306	ECQM1H562KZ	ECQM1H472KZ	Polyester, 0.0047μF, 50V, ± 10%	2	
C320	ECCD1H560K	ECCD1H121K	Ceramic, 120pF, 50V, ± 10%	1	
C750	ECKDMY103PF	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, $^{+100}_{-0}\%$	1	

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

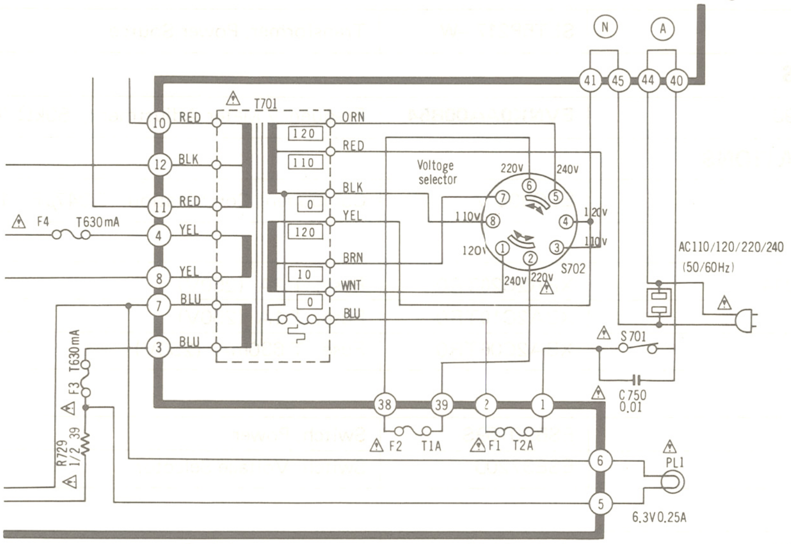
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SA-222 [M, MC] (ORDER NO. SD8012-1811) →	SA-222 [PA, PE]			
CABINET and CHASSIS PARTS					
28	SJF8029–4N	SJF8029N	Terminal Board	1	
30	SGP2510A	SGP2510–2C	Rear Panel	1	
31	RHR111	SHR127	Bushing, AC Cord	1	
32	RJA9YA	**RJA52Z**	AC Cord	1	
33	SJB3005	SJB3005–1	Battery Case	1	
ACCESSORY					
A2	Addition	RJP120ZBS	Plug Adapter, Power Source	1	
PACKING PARTS					
P4	SPG2829 SPG2831	SPG2899	Carton Box	1	○
P5	SQF10655–2 SQF10657–1	SQF10961	Instructions Book, Printed Matter	1	○

CHANGE OF SCHEMATIC DIAGRAM

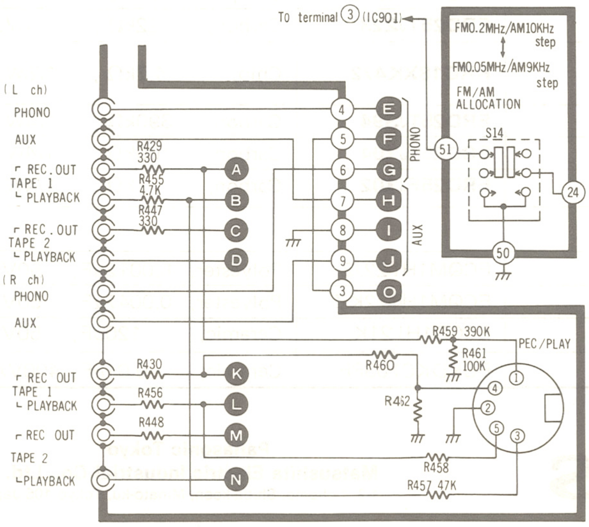
- **Power source circuit**

Notes: 1. **S701** : Power source switch in "**on**" position.
2. **S702** : Voltage selector switch in "**240V**" position.



N
A
41
45
44
40
T701
RED
BLK
RED
YEL
YEL
BLU
BLU
ORN
RED
BLK
YEL
BRN
WHT
BLU
120
110
0
120
10
0
Voltage selector
220V
240V
110V
120V
240V
220V
S702
F4
T630mA
F3
T630mA
R729
1/2 39
AC110/120/220/240
(50/60Hz)
S701
C750
0.01
38
39
1
F2
T1A
F1
T2A
PL1
6.3V 0.25A

- **REC/PLAY circuit**



To terminal ③ (IC901)
FM0.2MHz/AM10KHz step
FM0.05MHz/AM9KHz step
FM/AM ALLOCATION
S14
51
24
50
(L ch)
PHONO
AUX
REC.OUT
TAPE 1
PLAYBACK
REC.OUT
TAPE 2
PLAYBACK
(R ch)
PHONO
AUX
R429 330
R455 4.7K
R447 330
R430
R456
R448
E
F
G
H
I
J
O
A
B
C
D
K
L
M
N
PHONO
AUX
R459 390K
R461 100K
R460
R462
R458
R457 47K
PEC/PLAY

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8106450 Ⓗ SH/TN

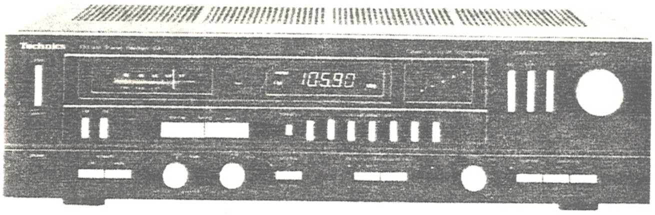
ORDER NO. SD81051884C

Service Manual

FM/AM Stereo Receiver

SA-222(K)

[MC]



***The colors of this model included silver and black.**
***The black type model is provided with (K) in the Service Manual.**

Area

* [MC] is available in Canada.

For additional information, please refer to the service manual for Model No. SA-222 (Silver Type).

Notes: * This service manual included only the change of the **SA-222 (Silver Type)** service manual (ORDER NO. SD8012-1811).

* When servicing model **SA-222(K) (Black Type)**, this service manual and **SA-222 (Silver Type)** (ORDER NO. SD8012-1811) service manual should be used together.

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SA-222 (ORDER NO.SD8012-1811) ➡	SA-222 (K) [MC]			
DIODES					
D921, 922 923	LN213RP	LN413YP	Light Emitting Diode, Yellow	3	
D924, 925	LN313GP	LN413YP	Light Emitting Diode, Yellow	2	
RESISTOR					
R928	**RRD18XK332**	**RRD18XJ222**	Chip, 2.2kΩ, 1/8W, ± 10%	1	
CABINET and CHASSIS PARTS					
1	SGX6967	SGX6967–1	Ornament, Left Side (Black)	1	
2	SBC321	SBC321–1	Button, Power, Input Selector	4	
4	SGWA222M	SGWA222KE	Front Panel (Black)	1	
10	SGX6969	SGX6969–1	Ornament, Right Side (Black)	1	
12	SGX6971	SGX6971–2	Ornament Plate (Black)	1	
13	SDU51	SDU51–1	Plate, Ornament	1	
14	SDU53	SDU53–1	Tinted Plate	1	

Technics

Panasonic Canada
Division of Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SA-222 (ORDER NO.SD8012-1811) ➡	**SA-222 (K) [MC]**			
15	SBC329	SBC329–2	Button, FM, AM	1	
16	SBC327	SBC327–1	Button, Tuning	1	
17	SBC325	SBC325–1	Button, FM/AM Preset	1	
21	SBC323	SBC323–1	Button, Push Switch	8	
26	SKC630S1	SKC630B1	Cabinet Cover	1	
PACKING PARTS					
P4	SPG2829 [M] SPG2831 [MC]	SPG2831	Carton Box	1	
P5	SQF10655–2 [M] SQF10657–1 [MC]	SQF10657–1	Instructions Book, Printed Matter	1	

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